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ABSTRACT

This study used state-level data on expenditures since 1977 to study the forces underlying the shift in state financing of higher education. The focus is on interactions between state appropriations for higher education, other state budget items, especially Medicaid, and the business cycle. The first section documents the substantial decline in state support for higher education over the past two decades. The second section examines the causes of that decline, focusing particularly on expansions in the Medicaid program and the implications for state higher education spending. The third section explores the effects of the business cycle on higher education subsidies. The fourth section briefly examines the impact of declines in state appropriations for higher education on the relative quality of public higher education institutions, which is to be discussed in more detail in a forthcoming companion paper. The principal reason offered for trends in state financing of higher education is fiscal pressure from other state budget requirements. The underlying story that emerges from this analysis is that pressure from other state budget items, especially Medicaid, has been crowding out appropriations for higher education. The pattern from the 1990s suggests that reductions in higher education appropriations are implemented during an economic downturn and then made permanent by failing to raise appropriations substantially during the subsequent economic recovery. (Contains 23 figures, 12 tables, and 35 references.) (SLD)

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State Fiscal Constraints and Higher Education Spending: The Role of Medicaid and the Business Cycle

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Discussion Paper No. 11

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State Fiscal Constraints and Higher Education Spending: The Role of Medicaid and the Business Cycle

Introduction

State governments have historically taken the lead in financing higher education. In fiscal year 2002, state governments spent approximately $63 billion on subsidies to higher education institutions. In contrast, the federal government granted approximately $9 billion in aid to low-income students, provided $6 billion in Hope and Lifelong Learning tax credits, and guaranteed approximately $38 billion in loans. Yet over the past twenty years, state support for higher education has gradually waned, with the share of higher education expenditures subsidized by state appropriations declining.

One result of declining state support has been the widely publicized rise in tuition at public institutions. Media reports have documented the most recent wave of tuition increases at public universities and reductions in student aid across the nation as state governments struggle to close projected budget deficits. In 16 states, for example, tuition for the 2002–2003 academic year increased by more than 10 percent at some or all state colleges and universities, relative to the 2001–2002 academic year.[1]

A second result, which has been less well recognized, is a widening gap in expenditures per student and average faculty salaries at public and private institutions. Since roughly three-quarters of postsecondary students enroll in public institutions, it is important to understand the reasons for the shifting state priorities. In this paper, we use state-level data on expenditures since 1977 to study the forces underlying the shift in state financing.

More specifically, we examine interactions between state appropriations for higher education, other state budget items (especially Medicaid), and the business cycle. The first section documents the substantial decline in state support for higher education over the past two decades. The second section examines the causes of that decline, focusing particularly on expansions in the Medicaid program and the implications for state higher education spending.

[1] Johnson, Lav, and Ribeiro (2003).

The third section explores the effects of the business cycle on higher education subsidies. The fourth section briefly examines the impact of declines in state appropriations for higher education on the relative quality of public higher education institutions, which is discussed in more detail in a forthcoming companion paper.

I. State Support for Higher Education

The decline in state support for higher education over the past several decades manifests itself in several common measures.[2] Figure 1 shows state appropriations for higher education relative to personal income. The state appropriations data are taken from a national database of support for higher education collected by the Center for Higher Education and Educational Finance at Illinois State University.[3] (Appropriations for capital outlays are not included in these figures, nor are appropriations for student aid financed by lottery revenue.[4]) The personal income figures are from the Bureau of Economic Analysis at the Department of Commerce. The data are for the continental United States only.

As figure 1 shows, state appropriations have fallen from an average of roughly $8.53 per $1,000 in personal income in 1977, to an average of about $7.07 per $1,000 in personal

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[2] For a discussion of the various metrics traditionally used to measure state tax effort in the context of higher education, see F. King Alexander, "Disparities in State Tax Effort for Financing Higher Education," paper presented at the Cornell Higher Education Research Institute conference on "Financing Higher Education in the 21st Century," May 2001.

[3] See http://coe.ilstu.edu/grapevine. The Southern Regional Education Board web site, www.sreb.org, also contains a spreadsheet with the annual "Grapevine" data.

[4] The appropriations in the "Grapevine" data are supposed to reflect only general revenue appropriations for higher education; states may also support higher education with other funds, which are ostensibly excluded from the "Grapevine" data. One important non–general-revenue source of higher education funding that has increased in the 1990s is merit-based aid financed by lottery revenue. Total lottery revenue net of prizes and administrative expenses grew at a real average annual rate of 3.3 percent between fiscal years 1992 and 2000, as four states (including Georgia) began lotteries during this time period. Only part of this lottery revenue is used for higher education, however, and some of the lottery revenue used to support higher education appears to be included in the "Grapevine" data. To examine the potential bias created by the partial exclusion of merit aid financed by lottery revenue from the "Grapevine" data, we analyzed state-by-state merit aid data. In particular, the Education Commission of the States identified state merit programs in July 2001. (See Education Commission of the States, "Merit Scholarships," July 2001.) Florida, Georgia, Kentucky, Michigan, Nevada and New Mexico were identified as having merit-based programs financed by lottery revenue or tobacco funds. It appears that the Michigan program, which amounts to about $115 million per year, is included in the Grapevine data. The programs in the other states amount to under $500 million, part of which may be included in the Grapevine data. (For example, the Chronicle of Higher Education has noted that the Kentucky program is included in the "Grapevine" data. See Schmidt 1999.) An aggregate of $500 million corresponds to approximately $1.75 per capita. Even if all of the $500 million were excluded from the Grapevine database, the bias created by the exclusion would thus amount to no more than $1.75 per capita. Such a bias would not significantly change the fundamental trends examined in this paper.

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income in 2002.[5] Since personal income amounted to $8.8 trillion in 2002, state appropriations would have been about $13 billion higher in 2002 if appropriations had been maintained at the ratio to personal income obtaining in 1977.

State appropriations for higher education have also fallen substantially relative to overall state spending. Our data for overall state expenditures are from the State Government Finance series tabulated by the Bureau of the Census. Figure 2 shows that appropriations for higher education fell from 7.3 percent of state expenditures in 1977 to 5.3 percent in 2000 (the most recent year available). Since total state expenditures amounted to $1.07 trillion in 2000, the appropriations for higher education would have been about $21 billion higher if the 1977 share had been maintained.

On a real per capita basis, state appropriations rose rapidly in the mid-to-late 1980s but then fell sharply in the early 1990s. In the late 1990s, state appropriations again increased rapidly, so that by 2001, state appropriations returned to approximately their level in the late 1980s. Note, however, that the 1990s recovery appears quite different than the 1980s recovery: Appropriations were slower to recover during the 1990s, and they never exceeded their previous peak. The same basic pattern holds with regard to appropriations per full-time equivalent student (see figure 3).

The consumer price index probably understates the inflation in input costs for higher education. For instance, as has been well documented elsewhere, the wages of college graduates have been rising more rapidly than the wages of high school graduates. Between 1980 and 2000, for instance, the earnings of full-time, full-year workers with more than four years of college rose by 2 percent per year faster than the consumer price index.[6] Since highly educated labor is a key input for higher education, deflating by the consumer price index probably understates the decline in buying power of state expenditures in higher education.[7]

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[5] The personal income figures are for the first three quarters of 2002, and cover the continental United States.

[6] For 1980 to 1990, the workers included in this calculation are those with more than four years of college. For 1991 to 2000, following the redesign of the Current Population Survey, the workers included are those with a master's, professional, or doctorate degree are included. Earnings are deflated by the CPI-U-RS.

[7] For further discussion of costs in higher education, see Thomas J. Kane, *The Price of Admission: Rethinking How Americans Pay for College* (Washington, D.C: Brookings Institution Press, 1999), Chapter 4; and National Center for Education Statistics, "Study of College Costs and Prices: 1988-1989 and 1997-1998," U.S. Department of Education, Office of Education Research and Improvement, NCES 2002-157., December 2001.

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A final perspective on the decline in state appropriations is that they have declined as a share of public university revenue. Our data on public university revenue are from the *Digest of Higher Education Statistics*, and data on state appropriations are from the Center for Higher Education and Educational Finance. State appropriations in this database include some items not counted as university revenue (such as appropriations to a higher education coordinating board or statewide scholarship program).[8] Figure 4 shows that in 1977, state appropriations represented 46.5 percent of public university revenue. By 1996, that ratio had fallen to 35.9 percent. Again, if the 1977 share had been perpetuated, state appropriations would have been approximately $13 billion higher in 1996.

Figure 4 highlights a key issue. Since state appropriations have been falling as a share of public university revenue, other sources of revenue must have been increasing. Figure 5 shows that revenue from tuition and fees at public colleges and universities has risen as a share of public university revenue. Given total 1997 revenue levels, the increase in tuition's share of revenue between 1977 and 1997 amounts to $7.5 billion, or an average of about $885 in tuition per full-time equivalent student at public colleges and universities.[9]

In 1997, in-state tuition and required fees averaged $2,271 at public institutions (including both four-year and two-year institutions).[10] The $885 difference in tuition therefore represents a change of roughly 39 percent in mean in-state tuition. Note that the real increase in tuition and required fees between 1977 and 1997 was $1,792. Given overall revenue in 1997, average tuition would have increased by only about $900 if tuition had remained at its 1977 share of revenue.

Another perspective on the $885 figure is its predicted impact on enrollment. Estimates from the literature suggest that a $885 increase in tuition would reduce college enrollment rates

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[8] Using data on state appropriations from the *Digest of Higher Education Statistics*, state appropriations as a share of public university revenue declined from 44.3 percent in 1978 to 32.5 percent in 1996, a slightly larger decline than the decline obtained using Grapevine data.

[9] The revenue data are from Department of Education, Digest of Education Statistics, Table 331, available at http://nces.ed.gov//pubs2002/digest2001/tables/dt331.asp. They include all 50 states (i.e., they include Hawaii and Alaska) in addition to the District of Columbia.

[10] Department of Education, *Digest of Education Statistics*, Table 316, available at http://nces.ed.gov//pubs2002/digest2001/tables/dt316.asp.

among new high school graduates by approximately 4 percentage points.[11] In other words, if tuition had been $885 lower in 1997, the college enrollment rate among high school graduates would have been roughly 71 percent in rather than its observed level of 67 percent.[12] We return to the issue of tuition revenue and explore the implications of constraints on tuition increases below.

Before turning to explanations of these trends, we briefly examine whether state appropriations have become more or less unequal across states over time. Figure 6 shows that a *negative* correlation exists between the level of higher education appropriations relative to gross state product (GSP) in 1977 and the change in the GSP share between 1977 and 2000. One might be tempted to conclude from figure 6 that the distribution is becoming less unequal over time, since those states with high spending levels in 1977 increased their appropriations by less than states with low spending levels in 1977. Table 1, however, shows the Gini coefficient and 90/10 ratio for state appropriations on a real per capita basis and as a share of GSP, as well as the standard deviation of log real per capita appropriations, by year. There has been little net change in inequality on a real per capita basis. Relative to GSP, furthermore, higher education appropriations have become *more* unequal, with the Gini coefficient increasing from 0.126 in 1977 to 0.172 in 2000 and the ratio of the 90th percentile state to the 10th percentile increasing from 1.95 in 1977 to 2.24 in 2000. This example therefore underscores the point emphasized by Quah (1993), that so-called "beta convergence" (as illustrated in figure 6) does not imply convergence of the distribution or decreased inequality.[13]

II. Explaining the Trends

The principal explanation we offer for the trends in section I is fiscal pressure from other state budget requirements (combined with political economy constraints on revenue, so that increases in other state budget needs partially crowd out higher education appropriations). In this section, we first document trends in other budget items and then examine their implications for higher education.

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[11] Kane (1999), pages 114–15.

[12] The 1997 enrollment rate is taken from Department of Education, *Digest of Education Statistics*, Table 184, available at http://nces.ed.gov//pubs2002/digest2001/tables/dt184.asp.

[13] Quah (1993).

Background on state expenditures

After fluctuating in a relatively narrow range during the late 1970s and early 1980s, total state expenditures increased rapidly in the late 1980s and early 1990s, rising from 9.5 percent of GSP in 1988 to 11.4 percent in 1993 (figure 7). The rapid increases reflect the effects of the recession of 1990–1991, increased Medicaid costs and expansions, the lagged effects of other federal mandates, and other factors.[14] Relative to GSP, expenditures declined in the mid-1990s as the economic recovery boosted GSP more than spending.

These overall spending shares of GSP mask important shifts in the distribution of spending. Table 2 shows the share of state budgets devoted to different activities in 1985 and in 2000. All the data for table 2 are from the State Government Finance series tabulated by the Bureau of the Census.

Note that the higher education figures in table 2 are different from the ones shown in figure 2. The data in figure 2 represent state appropriations for higher education; that is, they effectively measure transfers to public colleges and universities. The data in table 2, by contrast, represent *spending* by public higher education institutions. (The Census Bureau does not report appropriations from a state legislature to a public college or university because such appropriations are viewed as intragovernmental transfers. To ensure consistency with the other budget items, we use the higher education spending figures reported by the Census Bureau even though they represent a different concept from above.) The higher education budget share is therefore greater in table 2 than in figure 3.

Table 2 shows that means-tested benefits, including components of Medicaid, increased markedly as a share of state budgets between 1985 and 2000. Correctional expenses also rose. Spending on primary and secondary education remained roughly constant as a share of state budgets, while spending on highways, higher education, and other programs declined.

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[14] See Steven D. Gold, "State Fiscal Problems and Policies," in Steven D. Gold, ed., *The Fiscal Crisis of the States: Lessons for the Future* (Washington, D.C.: Georgetown University Press, 1995).

Table 2 suggests that increases in Medicaid spending and correctional spending could be associated with the relative decline in higher education. We therefore examine each of these areas in turn.

Medicaid provides medical assistance to the low-income elderly and disabled, as well as to low-income families and pregnant women. In fiscal year 1998, the elderly accounted for 29 percent of Medicaid payments; the blind and disabled accounted for 42 percent; and other beneficiaries (low-income children and nondisabled adults) accounted for the remaining 29 percent.[15] These costs are jointly financed by the federal government and state governments, with the federal share of costs depending inversely on state per capita income; the federal matching rate can vary from 50 to 83 percent.

The federal matching funds provided to state governments under the Medicaid program highlight a key consideration for state legislatures choosing between appropriations for Medicaid and higher education: Because of the federal matching, a dollar of Medicaid services for its residents costs a state significantly less than a dollar in state funds. As a result, if a state were to reduce state spending on Medicaid, it loses federal funds. In contrast, when a state reduces its subsidies to higher education and raises its tuition, the residents of the state may actually receive additional federal funds, in the form of greater eligibility for subsidized federal student loans and greater tax credits under the Hope and Lifetime Learning tax credit programs. Usually, these federal funds do not make up all of the difference—for instance, the Lifetime Learning tax credit would cover 20 percent of the higher tuition costs for families with income less than $100,000 at institutions with tuition less than $5,000. However, the fact is that while state expenditures on Medicaid spending are matched by the federal government, state spending on higher education is indirectly "taxed" through reduced tax credits and student loan subsidies.

Medicaid costs rose rapidly in the late 1980s and early 1990s, reflecting both expanded eligibility and increases in costs per enrollee. The expansion in eligibility reflected several factors:

[15] Committee on Ways and Means (2000), Table 15-16, page 915.

- Expansions in the Supplemental Security Income (SSI) program. In general, states are required to provide Medicaid coverage to SSI recipients.[16] Expansions in SSI coverage therefore automatically trigger expansions in Medicaid coverage. SSI coverage for the disabled rose rapidly in the late 1980s and early 1990s: The number of disabled SSI beneficiaries rose from 2.4 million in 1984 to 4.7 million in 1994.[17] This expansion reflects the 1990 Supreme Court ruling in *Sullivan v. Zebley*, which broadened eligibility to the SSI program for disabled children; state outreach efforts to enroll individuals in SSI rather than state-level cash assistance programs; and the expansion of SSI to cover acquired immunodeficiency syndrome (AIDS).[18]

- Expansions in Medicaid coverage for low-income mothers and children. Legislation in 1986 and 1987 allowed states to expand their Medicaid programs to cover low-income children; legislation in 1988 required states to cover certain categories of low-income infants; legislation in 1989 required states to cover children under age 6 and pregnant women who lived in families with income up to 133 percent of the poverty level; and additional legislation in 1990 required states to cover children over age 6 (and up to age 19) who were born after September 30, 1983, and who lived in families with income up to 100 percent of the poverty level.[19] Many states went beyond these minimum requirements. By 1992, nearly half of all women were eligible for Medicaid coverage if they became pregnant and almost one-third of children under the age of 14 were eligible for Medicaid for their full medical costs.[20]

- Expansions in Medicaid coverage for Medicare beneficiaries. In legislation enacted in 1988 and 1993, Congress required states to expand their Medicaid programs to cover Qualified Medicare Beneficiaries and Specified Low-Income Medicare Beneficiaries. Under these

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[16] The principal exception to this rule involves section 209(b) states. For further discussion, see Committee on Ways and Means, U.S. House of Representatives, *2000 Green Book*, pages 897–98.

[17] Committee on Ways and Means, U.S. House of Representatives, *2000 Green Book*, Table 3-1, page 214.

[18] See, for example, Kalmann Rupp and David Stapleton, *Growth in Disability Benefits: Explanations and Policy Implications* (Kalamazoo, Mich.: W.E. Upjohn Institute for Employment Research, 1998); and John Holahan and David Liska, "Reassessing the Outlook for Medicaid Spending Growth" (Washington, D.C.: The Urban Institute, 1997).

[19] For a description of these expansions, see Jonathan Gruber, "Health Insurance for Poor Women and Children in the U.S.: Lessons from the Past Decade," in James Poterba, *Tax Policy and the Economy* (MIT Press: Cambridge, 1997), pages 169-211.

[20] Cutler and Gruber (2002), page 843.

expansions, the state Medicaid programs finance part or all of the cost-sharing provisions under Medicare for those Medicare beneficiaries with incomes below certain thresholds.

In addition to these expansions in coverage, ongoing increases in the relative cost of health care—especially long-term care for the elderly, which is partially covered under Medicaid—raised spending.

Figure 8 shows the rapid growth in state Medicaid costs, especially in the late 1980s and early 1990s. To focus specifically on real *state* Medicaid costs, we use calendar-year data from the State Health Expenditure Accounts (SHEA), produced by the Centers for Medicare and Medicaid Services (formerly the Health Care Financing Administration). These data are derived from Medicaid State Financial Management Reports (HCFA-64). The share of hospital expenditures that will be offset by taxes or donations by the receiving facilities are not included in the figures.[21] We subtract the federal share of Medicaid spending from the total to obtain state spending. As portrayed in figure 8, state spending on Medicaid nearly doubled as a percent of gross state product between the late eighties and late nineties, rising rapidly from approximately 0.45 percent of state gross product to 0.80 percent. As we discuss further below, the rapid increases in Medicaid costs appear to be crowding out higher education spending.

A second important factor affecting state budgets is correctional expenses, which have risen rapidly as the prison population has expanded. Most of the increase in the prison population appears to be associated with changes in sentencing and parole policies, not changes in crime rates and patterns. A combination of increased incarceration of drug dealers and increased sentence lengths are supposedly the principal contributing factors to the increase in the prison population.[22]

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[21] In the late 1980s and early 1990s, many states used the disproportionate share hospital (DSH) rules to capture millions of dollars in federal matching funds without any underlying change in the provision of medical services. The federal government imposed additional restrictions on DSH funds in 1991, 1993, and 1997. Including all DSH expenditures in the historical data distorts the underlying trends in Medicaid spending and overstates the burdens Medicaid places on state budgets. For a discussion of the DSH and other similar issues, see National Health Policy Forum, "The Federal-State Medicaid Match: An Ongoing Tug-of-War over Practice and Policy," Issue Brief No. 760, George Washington University, December 2000.

[22] See, for example, Michael Tonry and Joan Petersilia, "Prisons Research at the Beginning of the 21st Century," in *Prisons*, edited by Michael Tonry and Joan Petersilia, (Chicago: University of Chicago Press, 1999).

Figure 9 shows that state prisoners as a share of the total population have increased from 0.1 percent in 1977 to more than 0.4 percent in 1999. The average annual operating cost per inmate was over $20,000 in 1996,[23] and the expansion in prisoners therefore represented a significant cost burden. The increase in prisoners has caused state correctional expenses to more than double as a share of gross state product (see figure 10), albeit from relatively modest levels. However, the econometric evidence below suggests that the apparent relationship between an increase in correctional spending and the decrease in higher education spending at the national level was not reflected at the state level: states with large increases in correctional spending were not more likely to reduce higher education spending.

Econometric analysis

To examine the effects of these factors on higher education spending, we undertook a variety of ordinary least squares regressions of the form:

$$HE_{it} = \alpha + \beta_1(ur_{it-1}) + \beta_2(rev_{it-1}) + \beta_3(MED_{it}) + \beta_4(CORR_{it}) + \sum_k \beta_k(X_{k,it}) + \varepsilon_{it}$$

where *HE* is a measure of appropriations to higher education in state *i* and year *t*, *ur* is the unemployment rate in state *i* and year *t* - 1 (the lag reflects both the timing of the budget process and the fact that the appropriations are on a fiscal year basis whereas the unemployment rates are on a calendar year basis),[24] *rev* is a measure of total state revenue in state *i* and year *t* - 1 (to reflect the lags involved in budget decisions), MED is a measure of Medicaid spending in state *i* and year *t*, *CORR* is correctional spending in state *i* and year *t*, the X variables are a set of controls, and the ε is a state-specific and year-specific error term. All regressions also have year dummies, and we run regressions both with and without a full set of state dummies also. The standard errors, shown below each coefficient estimate, use the Huber/White/Sandwich estimator of variance. The years included are 1977 through 2001; for some specifications, the sample ends before 2001 because of data limitations.

Tables 3 and 4 present the results on a real per capita basis. Table 3 includes state dummies. The results show that real higher education appropriations per capita are negatively

[23] *Statistical Abstract of the United States 2001*, page 201, table 333.

related to lagged state unemployment, positively related to total lagged state revenue, and negatively related to Medicaid spending per capita in the state. These relationships are consistently statistically significant across the specifications. They suggest that a 1 percentage point increase in the unemployment rate (from, say, 5 percent to 6 percent) reduces higher education appropriations per capita by about $4 (relative to a mean in 2001 of roughly $188 in constant 1996 dollars); a $1 increase in total (lagged) real state revenue raises higher education appropriations by about $.02, and a $1 increase in real state Medicaid spending per capita reduces higher education appropriations per capita by about $.06 or $.07.

To put these figures in perspective, note that real state Medicaid spending per capita increased from roughly $125 in 1988 to roughly $245 in 1998. Over the same time period, real higher education appropriations per capita declined from $185 to $175. According to our estimates, the predicted effect from the increase in Medicaid spending (6 to 7 percent of the $120 increase) is a reduction in higher education appropriations per capita of between $7.20 and $8.40. The increase in Medicaid spending could thus potentially explain the vast majority of the $10 decline in higher education appropriations per capita.

Our results suggest that increases in higher education appropriations are also associated with a Democratic house, senate, or governor, although the coefficient on having a Democratic governor is not statistically significant. A higher top marginal tax rate or average wage income tax rate is statistically associated with higher appropriations for higher education, even after controlling for total revenue. The latter result may reflect the fact that tax rates are a proxy for underlying political leanings in the state. (The source for our average and maximum tax rate on wages by state is the National Bureau of Economic Research's TAXSIM web page, http://www.nber.org/~taxsim. Feenberg and Coutts [1993] describe the TAXSIM model.[25])

Correctional spending per capita is negatively associated with higher education appropriations, but the relationship is not statistically significant. Despite the increases in correctional spending as a share of state budgets, the increases do not seem to be systematically tied to reductions in state appropriations for higher education across states.

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[24] We experimented with other lags. They were generally statistically insignificant once the first lag had been included in the regression.

[25] Feenberg and Coutts (1993).

Variables involving the stringency of the balanced budget rule in the state, which we had expected would be negatively associated with higher education spending especially when interacted with the unemployment rate, also entered with the expected signs but were not statistically significant. Our budget stringency index comes from the Advisory Commission on Intergovernmental Relations (1987).[26] The stringency index is measured on a scale of 1 to 10 (10 being the most stringent), and reflects budget rules in place in 1984 regarding deficits and whether these restrictions are constitutional or statutory.[27] Poterba (1994) uses this budget stringency index in his analysis of the effects of budgetary institutions.[28] We set our dummy variable equal to one if the stringency index is equal to 10, and the dummy variable equal to zero if the budget index is lower than 10. Of the 48 contiguous U.S. states, 25 have a budget ranking of 10; our dummy variable is thus set equal to one for 25 states and zero for 23 states.[29] We then interacted that dummy with the lagged unemployment rate.

Table 4 presents the per capita results without state dummies. The absence of a state dummy allows us to enter average Medicaid per capita expenses for an extended period (1980–1998) as another variable on the right-hand side, in addition to Medicaid per capita spending by year. The results are similar to those in table 3. The average Medicaid spending variable indicates that, even conditional on Medicaid spending in any given year, states with higher average Medicaid spending over long periods of time tended to have lower appropriations for higher education.

Appendix tables 1 and 2 add full-time equivalent students per capita as a regressor. The results ostensibly suggest that increases in students per capita raise appropriations per capita. These results should be viewed with caution, however, since the causality may run from appropriations to enrollment rather than (or in addition to) the reverse. The coefficients on the other variables, furthermore, are not qualitatively different from the results in tables 3 and 4.

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[26] Advisory Commission on Intergovernmental Relations (1987).

[27] The only difference between the highest possible ranking (10) and the next ranking (9) is whether the budget rules are constitutional or statutory.

[28] Poterba(1994).

[29] The states with a budget stringency index of 10 are Alabama, Arizona, Colorado, Delaware, Florida, Georgia, Idaho, Indiana, Iowa, Kansas, Kentucky, Missouri, Montana, Nebraska, New Jersey, New Mexico, North Carolina, Ohio, Oklahoma, Rhode Island, South Carolina, South Dakota, Tennessee, Utah, and West Virginia.

Given the endogeneity concerns surrounding enrollment, we therefore present appendix tables 1 and 2 for completeness but rely principally on the results from tables 3 and 4.

Tables 5 and 6 present the results when the dependent variable is state appropriations as a share of GSP. The most significant difference relative to the per capita results is that the coefficient on contemporaneous Medicaid expenses becomes insignificant. Note, however, that the long-term average Medicaid expenses (as a share of GSP) enters with a significant negative coefficient in table 6. In other words, these regressions do not reveal a higher-frequency connection between higher education appropriations and Medicaid spending, but they do indicate that states with heavier Medicaid burdens tend to have lower higher education appropriations relative to their state output.

Tables 3 through 6 all suggest an important role for the unemployment rate in explaining state appropriations for higher education in a specific year: Even conditional on total state revenue, appropriations for higher education decline when the unemployment rate increases. During an economic downturn, the effect on higher education appropriations is exacerbated because an increase in the unemployment rate is likely to be associated with a decline, or at least a deceleration, in total state revenue. The result is that higher education appropriations are, not surprisingly, lower during economic downturns than during booms. We therefore turn in the next section to the effect of the business cycle on higher education appropriations.

III. Business Cycle

All states except Vermont have some sort of balanced budget requirement. Although most states can use accounting strategies to essentially borrow against future revenues, the ability to do so is circumscribed to varying degrees in different states. These requirements force state governments to undertake counter-cyclical fiscal policies, reducing expenditures or raising taxes during an economic downturn[30] Typically, states cut back programs during the downturn and then expand them during the subsequent recovery.

[30] Arik Levinson (1998).

Many states accumulated "rainy day" funds to reduce the effects of the business cycle on their operating budgets. But the rainy day funds were too small to offset the deterioration in state budgets that occurred over the past several fiscal years. Total year-end state balances, which include both general fund balances and rainy day funds, amounted to $49 billion at the end of fiscal year 2000.[31] Aggregate state deficits for fiscal years 2001 through 2003 were substantially larger, and the projected deficits for fiscal year 2004 alone are in the range of $70 to $80 billion.[32] Various factors limit the effectiveness of the rainy day funds, including limits on accumulation rates and apparent reluctance to use such funds extensively in the downturn.[33] The implication is that the funds may attenuate, but do not come close to eliminating, the cyclicality of state expenditures.

The general cyclical pattern of state expenditures—reductions during an economic downturn and then expansions during an economic recovery—is apparent in figure 11 for higher education appropriations. The dark blue line shows real appropriations per full-time equivalent student at public colleges and universities. As the economy entered a recessionary period in the early 1980s, appropriations declined in real terms. Then during the recovery of the 1980s, appropriations recovered and ultimately exceeded their pre-recession peak. (The cyclical pattern of appropriations is less apparent in figures 1 and 2 since the denominator in those graphs is also declining during a recession and increasing during a recovery.)

Figure 11 also, however, suggests that something was dramatically different during the economic cycle of the 1990s. As the economy entered a recession in the early 1990s, real appropriations per student again declined. But during the boom of the 1990s, appropriations for higher education rose only slightly and never reached their pre-recession levels.

The same basic pattern manifests itself in Texas, which unlike the rest of the nation experienced a recession in the mid-1980s as oil prices plummeted. The red line in figure 11

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[31] National Association of State Budget Officers(2002), Table 8.

[32] See, for example, Iris Lav, "The State Fiscal Crisis Is Impeding Economic Growth; Federal Aid to States Would Be Most Effective Stimulus," Center on Budget and Policy Priorities, Feb 18, 2003.

[33] For a discussion of recent trends, see Bob Zahradnik and Nick Johnson, "State Rainy Day Funds: What to Do When It Rains?" Center on Budget and Policy Priorities, January 31, 2002; and Bob Zahradnik and Rose Ribeiro, "Heavy Weather: Are State Rainy Day Funds Working?" Center on Budget and Policy Priorities, April 2003. Also see Christian Gonzalez and Arik Levinson, "State Rainy Day Funds and the State Budget Crisis of 2002-?" paper presented at the conference on "State Fiscal Crises," The Urban-Brookings Tax Policy Center, April 2003.

shows that real appropriations declined during the mid-1980s recession in Texas and never recovered.

Figures 12 through 15 underscore this pattern on a cross-state basis. Figure 12 shows that states with larger increases in unemployment between 1979 and 1982 reduced their appropriations for higher education by more than states with smaller increases in unemployment. Figure 13 shows that during the subsequent recovery, states that had larger reductions in unemployment boosted their higher education appropriations by more than states with smaller reductions in unemployment.

Figures 14 and 15 tell a dramatically different story for the early 1990s recession. As the national economy went into a recession between 1989 and 1992, states with larger increases in unemployment rates reduced their higher education appropriations by more than states with smaller increases in unemployment rates. Figure 14 thus appears similar to figure 12. But Figure 15 is substantially different from figure 13. During the recovery of the mid-1990s, larger declines in unemployment rates across states were not statistically associated with larger increases in higher education appropriations. (Figure 15 ends in 1999, slightly before the peak of economic activity in early 2001. Figure 16 shows that between 2000 and 2002, the pattern from earlier recessions appears to be repeating itself: States with larger increases in unemployment have reduced state appropriations for higher education by more than states with smaller increases in unemployment.)

The lesson from these graphs is confirmed in regressions that restrict the sample to the 1990s expansion. In such regressions, the coefficient on the lagged unemployment rate declines (in absolute value) and often becomes statistically insignificant. Table 7 presents the coefficients on the lagged unemployment rate for regressions (1) through (8) from table 3 above, over the entire sample period and for 1993 forward.

All the evidence above thus suggests that state higher education appropriations did not respond to the reduction in unemployment during the 1990s as one would have expected based on earlier relationships. One of the obvious factors that changed between the early 1980s and the early 1990s is the rapid increase in Medicaid costs, as documented above. It is therefore

possible that the expansion in Medicaid is somehow related to the failure of higher education appropriations to recover in the 1990s as would have been expected.

To look deeper into the interactions among the business cycle, higher education, and Medicaid, we ran ordinary least squares regressions for each individual state of the form:

$$HE_t = \alpha + \beta_1(ur_{t-1}) + \beta_2(year) + \beta_3(year * dum) + dum + \varepsilon_t$$

where *HE* is a measure of the state's appropriations for higher education, *ur* is the lagged unemployment rate in the state, year is a time trend, and *dum* is a dummy variable which equals one for 1989 and before and zero for 1990 and later.[34]

The first thing of interest from these regressions is that the β_3 coefficients, which reflect the downward shift in the trend in higher education appropriations in the 1990s, are positively related to average Medicaid expenditures per capita between 1980 and 1998. Figure 17 shows the relationship for the β_3 coefficients derived from regressions with real per capita higher education appropriation (in thousands of dollars) on the left-hand side. Since the dummy variable is defined as equal to one for 1989 and before and zero thereafter, this result suggests that states with larger per capita Medicaid burdens had a larger downward shift in their trend higher education appropriations in the 1990s than states with smaller per capita Medicaid burdens. Excluding New York, the relationship is still positive but no longer statistically significant. (The β_3 coefficients are also positively related to Medicaid spending in 1989, the final year in which the dummy is equal to one, but the relationship is not statistically significant when New York is excluded.) Nonetheless, figure 17 is consistent with Medicaid playing some role in crowding out higher education appropriations.

The state-level regressions offer other insights. For example, the β_1 coefficients for each state measure the responsiveness of higher education appropriations in that state to changes in the unemployment rate. We ran separate regressions for *HE* defined as real per capita appropriations and log real per capita appropriations. Table 8 indicates wide variance

[34] Betts and McFarland (1995) study the effect of the business cycle on appropriations to community colleges.

across the states in the relationship between appropriations for higher education and unemployment rates. (The coefficients for real per capita appropriations should be multiplied by 10 to indicate the dollar effect per capita from a 1 percentage point increase in the state's unemployment rate, for example from 5 to 6 percent.[35])

Figure 18 shows that these coefficients are *negatively* related to average Medicaid costs in the state between 1980 and 1998. In other words, in response to a given increase in the unemployment rate, states with more costly Medicaid programs reduce their higher education appropriations by more than states with less costly Medicaid programs.

To complete our investigation of the relationship between Medicaid expenses and the apparent shift in the cyclical responsiveness of higher education appropriations in the early 1990s, we ran state-level ordinary least squares regressions of the form:

$$HE_t = \alpha + \beta_1(ur_{t-1}) + \varepsilon_t$$

for different sub-samples of our data: years before 1989 in which the unemployment rate increased; years before 1989 in which the unemployment rate declined; years in 1989 or thereafter in which the unemployment rate increased; and years in 1989 or thereafter in which the unemployment rate declined. The benefit of such sub-samples is that they allow us to examine asymmetries in responses to increases and decreases in the unemployment rate before and after 1989; the cost is that the data divisions clearly limit our sample size for each regression.

Given our sub-samples, we have four different estimates of β_1 for each state: $\{\beta_{1,uppost\text{-}1989}, \beta_{1,uppre\text{-}1989}\beta_{1,downpost\text{-}1989}, \beta_{1,downpre\text{-}1989}\}$, where the "up" subscript indicates that the coefficient is from the regressions for years in which the unemployment increased and the "down" subscript indicates that the coefficient is from the regressions for years in which the unemployment declined. Our hypothesis, that the shift in the cyclical behavior of state

[35] The dependent variable, appropriations per capita, is expressed in thousands of dollars, while an unemployment rate of 5 percent is entered as .05 in the regressions. To map the coefficient into dollars per capita per percentage point of unemployment, one must therefore multiply by 1,000 and divide by 100, or multiply by 10.

appropriations is linked to Medicaid spending, can be explored by testing whether: $\beta_{1,uppost\text{-}1989} - \beta_{1,uppre\text{-}1989}$ is negatively related to Medicaid spending; $\beta_{1,downpost\text{-}1989} - \beta_{1,downpre\text{-}1989}$ is positively related to Medicaid spending; and $(\beta_{1,uppost\text{-}1989} - \beta_{1,uppre\text{-}1989})$ - $(\beta_{1,downpost\text{-}1989} - \beta_{1,downpre\text{-}1989})$ is negatively related to Medicaid spending.

Figure 19 shows a scatterplot of $\beta_{1,uppost\text{-}1989} - \beta_{1,uppre\text{-}1989}$ and average Medicaid spending for 1980–98. An ordinary least squares regression of the $\beta_{1,uppost\text{-}1989} - \beta_{1,uppre\text{-}1989}$ for each state on average Medicaid spending in each state yields (with robust standard errors):

$$\beta_{1,uppost\text{-}1989} - \beta_{1,uppre\text{-}1989} = \quad 0.15 - .00378 * \text{Medicaid}$$
$$(.37)\ (.0019)$$

The statistically significant negative relationship suggests that in states with higher Medicaid spending, state appropriations for higher education became more sensitive to increases in the unemployment rate in the 1990s.[36]

Figure 20 shows a scatterplot of $\beta_{1,downpost\text{-}1989} - \beta_{1,downpre\text{-}1989}$ and Medicaid spending. The ordinary least squares regression is:

$$\beta_{1,downpost\text{-}1989} - \beta_{1,downpre\text{-}1989} = -0.76 + .0047 * \text{Medicaid}$$
$$(.31)\ (.0020)$$

The positive relationship is again statistically significant, suggesting that in states with higher Medicaid spending, state appropriations for higher education became *less* sensitive to declines in the unemployment rate in the 1990s, relative to states with lower Medicaid spending.[37]

Finally, figure 21 shows that $(\beta_{1,uppost\text{-}1989} - \beta_{1,uppre\text{-}1989}) - (\beta_{1,downpost\text{-}1989} - \beta_{1,downpre\text{-}1989})$ is negatively related to Medicaid spending across states, indicating that asymmetries in response to increases and decreases in the unemployment rate became more severe in states with high Medicaid costs than in other states. The ordinary least squares regression is:

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[36] The negative, statistically significant relationship also holds with regard to Medicaid spending in specific years, such as 1989.

$$(\beta_{1,uppost\text{-}1989} - \beta_{1,uppre\text{-}1989}) - (\beta_{1,downpost\text{-}1989} - \beta_{1,downpre\text{-}1989}) = \underset{(.36)}{0.92} - \underset{(.0022)}{.0085} * \text{Medicaid}$$

The bottom line is that a variety of perspectives suggest a strong negative linkage between higher education appropriations and Medicaid spending. The substantial increases in Medicaid spending during the 1980s and early 1990s appear to have played an important role in the failure of higher education appropriations to rise significantly during the 1990s boom. And as discussed in the conclusion section, the projected increases in Medicaid costs over the next several decades raise serious questions about the future path of state appropriations for public higher education.

Cyclicality of higher education relative to other budget items

A final issue of interest is the cyclicality of higher education appropriations relative to other budget items. To examine this issue, we ran ordinary least squares regressions of the form:

$$X_t = \alpha + \beta_1(ur_{t-1}) + \beta_3(year) + \beta_4(year * dum) + dum + \varepsilon_t$$

separately for each state, where X is real spending per capita in a specific state budget category. The coefficients on unemployment from these various regressions provide insight into which components of state budgets are most sensitive to the business cycle. Table 9 provides the means of the coefficients across the states (with each state's coefficient inversely weighted by the standard error associated with that coefficient). The results for the log real per capita levels can be interpreted as the percentage change in the budget item in response to a percentage point increase in the unemployment rate.

As the table indicates, overall state spending falls by roughly $23 per capita for every percentage point increase in the unemployment rate (e.g., from 5 percent to 6 percent). State

[17] Again, the positive statistically significant relationship holds with regard to Medicaid costs in a specific year, such as 1989.

capital spending is the most responsive to the business cycle: It declines by almost $10 per capita for every percentage point increase in the unemployment rate.

Table 9 also indicates that higher education is among the most cyclical of state budget categories. A 1 percentage point increase in the unemployment rate under this specification is associated with roughly a $3.80 decline state appropriations for higher education, on average. These results are roughly consistent with the estimates for higher education from tables 3 and 4 above. The log results show that on a log change basis, higher education remains relatively responsive to fluctuations in the unemployment rate.

It is important to emphasize, however, that our higher education appropriation and Medicaid data are taken from a different source than the rest of the state budget data, that the budget categories presented are not exhaustive, and that the results could be affected by the accounting rules governing federal cost-sharing of state programs in these data.

Also note that, as may have been expected, elementary and secondary education spending is not as adversely affected by the business cycle as higher education appropriations. (The regressions even suggest that such spending rises when the unemployment rate increases, on average.) Elementary and secondary education therefore dampens the business cycle effects on education as a whole.

Medicaid spending does not appear to vary significantly with the business cycle, perhaps because states take steps to mitigate Medicaid costs during downturns (such as restricting benefits and reducing provider payments rates) and do not expand the program substantially during booms.[38] Medicaid spending is part of a broader category of means-tested benefits, however. Our results for this broader category of welfare spending show that such spending increases during a downturn, which is not surprising given its role as an automatic stabilizer. These results differ from those of Hines, Hoynes, and Krueger (2001), who find that welfare spending increases during economic recoveries and declines during economic

[38] For a description of recent actions states are taking to restrict eligibility to Medicaid in the wake of the current state fiscal crisis, see Leighton Ku, Donna Cohen Ross, and Melanie Nathanson, "State Medicaid Cutbacks and the Federal Role in Providing Fiscal Relief to States," Center on Budget and Policy Priorities, August 2, 2002.

downturns.[39] It is worth noting that unlike the Hines, Hoynes, and Krueger approach, the results in table 9 allow the coefficient on unemployment to vary across states.

Finally, we also undertook regressions similar to the ones in table 3, but in which the coefficient on unemployment is constrained to be the same across states. In particular, we regress:

$$X_{it} = \alpha + \beta_1(ur_{it-1}) + yeardummies + statedummies + \varepsilon_{it}$$

where X represents spending for different budget categories. We conduct the regressions when X is expressed as the real per capita level and also separately for the log of real per capita levels. Robust standard errors are in parentheses.[40]

The pro-cyclical nature of capital spending and higher education spending is born out in table 10, when the coefficient on unemployment rate is constrained to be the same across states. A 1 percentage point increase in unemployment is associated with a $5.58 decline in real spending per capita on capital spending and a $3.96 decline in higher education spending.

However, several results in table 10 differ somewhat from those in table 9, especially for correctional spending, Medicaid spending, and total state spending. The result for total state spending is particularly puzzling: It suggests no statistically significant effect on total state spending from an increase in the unemployment rate. The ostensible reason appears to be the larger counter-cyclical increases in state welfare spending in these specifications. For our purposes, the important point is that the general picture remains that higher education appropriations are less sensitive to the business cycle than capital spending, but more sensitive than most other components of state budgets.

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[39] Hines, Hoynes, and Krueger(2001).

[40] Note that in table 9 and table 10, we have adjusted the coefficients and standard errors so that they are easily interpreted as the per capita dollar movement in the budget category associated with a percentage point movement in the unemployment rate. The results for per capita higher education appropriations are identical to those in the first column of table 3, except for this expositional adjustment—which merely involves multiplying the coefficients and standard errors by 10.

IV. Quality Concerns

The decline in state appropriations for higher education has only been partially offset by increases in tuition. The reason presumably is that tuition is not set in a political vacuum. As of the mid-1990s, tuition at public institutions was determined directly by the state legislature in 10 states. In most other states, a higher education coordinating board or governing board set tuition.[41] The coordinating board, however, is also subject to political constraints. State politicians are thus (perhaps not surprisingly) involved at least to some extent in the process of setting tuition at public colleges and universities, with the intensity of involvement varying across the states.

The political context in which tuitions are set imposes limits on the degree to which tuition increases can offset appropriations reductions. As Ronald Ehrenberg has argued, "In many states governors and state legislatures firmly are committed to the belief that in-state tuition should be kept low, which limits another major source of revenue for public higher education initiatives."[42] Experience from the early 1990s, for example, suggests substantial voter backlash to tuition increases.[43]

The combination of the decline in state appropriations and political restrictions on raising tuition at public institutions has produced a marked decline in educational and general spending per full-time equivalent student at public schools relative to private schools. Figure 21 shows that the ratio has fallen from about 70 percent in 1977 to about 58 percent in 1996.[44]

These differential spending trends raise the concern that the "quality" of public universities may be declining relative to private universities. Quality in higher education is difficult to measure, complicating analysis of this issue. We use the available data to examine this issue in a companion paper.

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[41] Kane (1999), page 39.
[42] Ehrenberg (2002).
[43] Callan (2002).
[44] Ehrenberg (2002) also finds such a decline. The ratio of *total* (as opposed to educational and general) spending per full-time equivalent student at public institutions relative to private institutions fell from 63 percent in 1977 to 53 percent in 1996.

V. Looking to the Future

The underlying story that emerges from this analysis is that pressure from other state budget items, especially Medicaid, has been crowding out appropriations for higher education. The pattern from the 1990s suggests that reductions in higher education appropriations are implemented during an economic downturn and then made permanent by failing to raise appropriations substantially during the subsequent economic recovery.

The current economic downturn is putting heavy pressure on state budgets: In aggregate, projected state deficits amounted to more than $50 billion when the states were enacting their fiscal year 2003 budgets, in addition to the nearly $40 billion in deficits for fiscal year 2002.[45] Since the enactment of their fiscal year 2003 budgets, additional deficits of more than $25 billion for the fiscal year have appeared.[46] In addition, the projected fiscal year 2004 budget deficits amount to between $70 billion and $80 billion.[47] The National Conference of State Legislatures estimates that a quarter of states had 2003 budget deficits exceeding 10 percent of their general fund budgets.[48]

In response, many states are responding by sharply reducing appropriations for higher education. Table 11 presents the appropriations figures that are available from the Center for Higher Education and Educational Finance at Illinois State University. They show substantial reductions in higher education appropriations in many states, particularly Idaho, Illinois, Missouri, Oregon, and Virginia. The results from the 1990s raise the danger that these reductions will turn out to represent a long-lasting ratcheting down in support for higher education, rather than a temporary adjustment to cyclical state fiscal problems.[49] One recent media report underscored precisely this danger.[50]

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[45] See, for example, Iris J. Lav, "State Fiscal Conditions Continue To Deteriorate; Federal Assistance Badly Needed," Center on Budget and Policy Priorities, *Revised September 23, 2002*

[46] National Conference of State Legislatures (2003).

[47] Lav (2003).

[48] National Conference of State Legislatures (2002).

[49] Since the reductions in higher education appropriations that were perpetuated in the 1990s were initially implemented during an economic downturn, an interesting question arises as to whether federal assistance to the states during a recession would mitigate not only the immediate reductions in higher education appropriations, but also have enduring effects over a longer period of time. (In July 2002, the U.S. Senate voted 75 to 24 to provide $9 billion in financial assistance to states, by increasing the federal share of Medicaid costs.) On the one hand, the underlying trend in state budgets would not be significantly affected by such temporary federal assistance, suggesting that such assistance could possibly delay, but not ultimately attenuate, reductions in higher education

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At the same time, political constraints limit tuition increases at public universities—so the appropriations reductions partially manifest themselves in reduced quality at public institutions relative to private ones. Such issues are likely to become even more difficult in the future because of further projected increases in Medicaid costs and because of demographic shifts over the medium term.

First, state budgets are likely to come under continued pressure from the Medicaid program. The cause of further rapid growth in Medicaid costs is likely to be different from the causes of growth over the past 20 years, however. Much of the growth in Medicaid during the late 1980s was associated with expanding eligibility for the disabled (as well as for other groups). In the future, much of the growth in costs is likely to be associated with the elderly, both because the baby boomers will swell the ranks of the elderly and because of ongoing increases in the relative cost of health care for the elderly.

The population age 65 and over is expected to increase from 35 million in 2000 to 70 million by 2030.[51] The low-income elderly are eligible for Medicaid, suggesting that the number of elderly beneficiaries will rise rapidly in the future. Furthermore, it is reasonable to expect ongoing increases in the relative cost of health care for the elderly, which will put additional pressure on the Medicaid program.

Two components of health care for the elderly loom especially large for the Medicaid program: long-term care and prescription drugs. In 2000, Medicaid financed nursing home care for more than two-thirds of nursing home residents; these expenses represented about one-quarter of total Medicaid payments.[52] Long-term care costs are expected to rise rapidly in the

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appropriations. On the other hand, the political economy of state budgets may be such that reductions in certain budget categories (relative to others) are more viable in a time of recession, raising questions about whether the distribution of spending reductions and/or tax increases necessary to address underlying fiscal imbalances would be affected if such adjustments were not implemented during a recession.

[50] Selingo (2003).

[51] Bureau of the Census projections as reported in *Statistical Abstract of the United States 2001*, Tables 11 and 13.

[52] Urban Institute, "Long Term Care for the Elderly," available at http://www.urban.org/content/IssuesInFocus/Long-TermCarefortheElderly/FinancingLong-TermCare/FinancingLTC.htm

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next few decades: According to the Urban Institute, real long-term care costs in Medicaid are projected to increase by 74 percent to 103 percent over the next 20 years.[53]

Another source of pressure on the Medicaid program is prescription drug costs. Almost all elderly Medicaid beneficiaries are also enrolled in Medicare, which currently has no drug benefit. The Medicaid program is therefore generally responsible for prescription drug costs for such beneficiaries. As medical services have shifted toward outpatient, drug-based therapies and as the cost of prescription drugs has risen rapidly, costs have effectively been shifted from Medicare to Medicaid —and this trend will likely continue in the absence of policy intervention.

The net result from these various factors is that the Congressional Budget Office estimates that federal Medicaid costs will rise from 1.2 percent of GDP today to 2.8 percent of GDP by 2030 (see figure 22). Given the cost-sharing between the federal government and state governments inherent in the Medicaid program, this projection also implies a substantial increase in state Medicaid costs.

To the extent that state Medicaid costs crowd out higher education appropriations in the future, the projected increase in state Medicaid costs poses a threat to the public higher education system. On the one hand, tuition increases could theoretically offset the reduction in appropriations. But it is important to remember that a given percentage reduction in state appropriations requires a much larger percentage increase in tuition to offset it, since state appropriations continue to represent a much larger share of public university revenue than tuition. In the absence of increases in financial aid, the required tuition increases would impose a heavier financial burden on students, and would disproportionately affect low-income students. A $1,000 increase in tuition at public two-year schools decreases enrollment rates by 7.2 percentage points for low-income students and 4.4 percentage points for high-income students.[54] In any case, recent history suggests that political constraints will not allow tuition to fully offset reductions in state appropriations, raising questions about the relative quality of education that public institutions will be able to provide in the future.

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[53] Ibid.

These pressures will be exacerbated by demographic and social shifts. As the children of the baby boomers reach college age, the number of Americans age 18 to 24 will rise from 26.0 million in 1999 to 30.2 million in 2010—an increase of 16 percent, relative to an expected increase in the total population of 10 percent.[55] Ongoing increases in high school graduation rates and the share of high school graduates aspiring to enroll in college, along with potential increases in the share of "nontraditional" students, mean that college enrollment is expected to increase by roughly 20 percent between 1999 and 2011.[56]

States will thus face even more challenging trade-offs in the future, as they struggle to meet rising Medicaid costs along with expanded demands on public universities. How the resulting fiscal pressures will be addressed—for example, through reforms to Medicaid, rapid tuition increases, reductions in quality at public higher education institutions, or tax increases—remains to be seen.

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[54] Kane (1999), page 106.
[55] Bureau of the Census projections as reported in *Statistical Abstract of the United States 2001*, Tables 12 and 13.
[56] Department of Education, *Projections of Education Statistics: 2011*, Chapter 2 and Table 11b.

References

Advisory Commission on Intergovernmental Relations. 1987. *Fiscal Discipline in the Federal System: National Reform and the Experience of the States*. Washington, D.C.: Advisory Commission on Intergovernmental Relations.

Alexander, F. King. 2001. "Disparities in State Tax Effort for Financing Higher Education." Paper presented at the Cornell Higher Education Research Institute conference on "Financing Higher Education in the 21st Century," Ithaca, May 23.

Betts, Julian, and Laurel McFarland. 1995. "Safe Port in a Storm: The Impact of Labor Market Conditions on Community College Enrollments." *Journal of Human Resources* 30(4): 741–65.

Callan, Patrick M. 2002. "Coping with Recession: Public Policy, Economic Downturns, and Higher Education," National Center for Public Policy and Higher Education.

Committee on Ways and Means, U.S. House of Representatives. 2000. *2000 Green Book.* Washington, D.C.: Government Printing Office.

Cutler, David, and Jonathan Gruber. 2002. "Health Policy in the Clinton Era." In *American Economic Policy in the 1990s,* edited by Jeffrey Frankel and Peter Orszag (825-874). Cambridge: MIT Press .

Department of Education, *Digest of Education Statistics 2001*

Department of Education, *Projections of Education Statistics: 2011*

Ehrenberg, Ronald. 2002. "Studying Ourselves: The Academic Labor Market," NBER Working Paper 8965. Cambridge, Mass.: The National Bureau of Economic Research.

Feenberg, Daniel Richard, and Elizabeth Coutts. 1993. "An Introduction to the TAXSIM." *Model Journal of Policy Analysis and Management* 12(1): 189-194.

Gold, Steven D. 1995. "State Fiscal Problems and Policies." In *The Fiscal Crisis of the States: Lessons for the Future,* edited by Steven D. Gold (6-40). Washington, D.C.: Georgetown University Press.

Gonzalez, Christian, and Arik Levinson. 2003. "State Rainy Day Funds and the State Budget Crisis of 2002-?" Presentation at The Urban-Brookings Tax Policy Center conference "State Fiscal Crises: Causes, Consequences, and Solutions,", Washington, D.C., April 3.

Gruber, Jonathan. 1997. "Health Insurance for Poor Women and Children in the U.S.: Lessons from the Past Decade." In *Tax Policy and the Economy,* edited by James Poterba (169–211). Cambridge: MIT Press.

Hamermesh, Daniel. 2002. "Quite Good—For Now." *Academe* 88 : 20-29.

Hines, James R. Jr., Hilary W. Hoynes, and Alan B. Krueger. 2001. "Another Look at Whether a Rising Tide Lifts All Boats." NBER Working Paper No. 8412. Cambridge, Mass.: The National Bureau of Economic Research.

Holahan, John, and David Liska. 1997. *Reassessing the Outlook for Medicaid Spending Growth.* Washington, D.C.: The Urban Institute. *Assessing the New Federalism* Policy Brief A-6.

Johnson, Nicholas Iris J. Lav, and Rose Ribeiro. 2003. "States Are Making Deep Budget Cuts in Response to the Fiscal Crisis." Washington, D.C.: Center on Budget and Policy Priorities.

Kane, Thomas J. 1999. *The Price of Admission: Rethinking How Americans Pay for College.* Washington, D.C.: Brookings Institution Press.

Lav, Iris J. 2002 (revised September 22). "State Fiscal Conditions Continue to Deteriorate; Federal Assistance Badly Needed.," Washington, D.C.: Center on Budget and Policy Priorities.

———. 2003. "The State Fiscal Crisis Is Impeding Economic Growth; Federal Aid to States Would Be Most Effective Stimulus." Washington, D.C.: Center on Budget and Policy Priorities.

Levinson, Arik. 1998. "Balanced Budgets and Business Cycles: Evidence from the States." *National Tax Journal* 51(4): 715–32.

National Association of State Budget Officers. 2002. "The Fiscal Survey of the States."

National Center for Education Statistics. 2001. "Study of College Costs and Prices: 1988-1989 and 1997-1998." NCES 2002-157. U.S. Department of Education, Office of Education Research and Improvement.

National Conference of State Legislatures, Fiscal Affairs Program. 2002. *State Budget and Tax Actions 2002: Preliminary Report*. Washington, D.C.: National Conference of State Legislatures.

———. 2003. "State Budget Gaps Growing at Alarming Rate." Washington, D.C.: National Conference of State Legislatures.

National Health Policy Forum. 2000. "The Federal-State Medicaid Match: An Ongoing Tug-of-War over Practice and Policy." Issue Brief No. 760. Washington, D.C.: George Washington University.

Poterba, James M. 1994. "State Responses to Fiscal Crises: The Effects of Budgetary Institutions and Politics." *The Journal of Political Economy* 102(4): 799–821.

Quah, Daniel 1993. "Galton's Fallacy and Tests of the Convergence Hypothesis," *Scandinavian Journal of Economics*.

Rupp, Kalmann, and David Stapleton. 1998. *Growth in Disability Benefits: Explanations and Policy Implications.* Kalamazoo, Mich.: W.E. Upjohn Institute for Employment Research.

Schmidt, Peter. 1999. "As Economy Chugs Along, States Pour Money into Higher Education" *Chronicle of Higher Education*. 46(17): A28.

Selingo, Jeffrey . 2003. "The Disappearing State in Public Higher Education: When the Recession Ends, Appropriations May Not Rebound," *Chronicle of Higher Education* 49(25): A22.

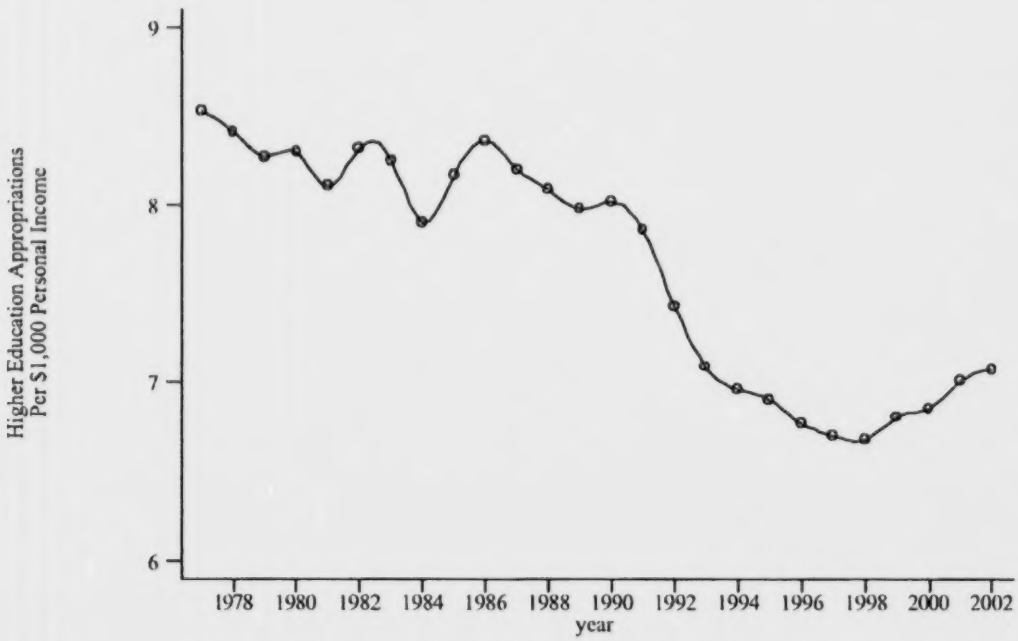
Tonry, Michael, and Joan Petersilia. 1999. "Prisons Research at the Beginning of the 21st Century." In *Prisons,* edited by Michael Tonry and Joan Petersilia (1-17). Chicago: University of Chicago Press.

The Urban Institute. "Long Term Care for the Elderly." Available at http://www.urban.org/content/IssuesInFocus/Long-TermCarefortheElderly/FinancingLong-TermCare/FinancingLTC.htm

Zahradnik, Bob, and Nick Johnson. 2002. "State Rainy Day Funds: What to Do When It Rains?" Washington, D.C.: Center on Budget and Policy Priorities.

Zahradnik, Bob, and Rose Ribeiro. 2003. "Heavy Weather: Are State Rainy Day Funds Working?" Washington, D.C.: Center on Budget and Policy Priorities.

Figure 1: State appropriations for higher education per $1,000 of personal income

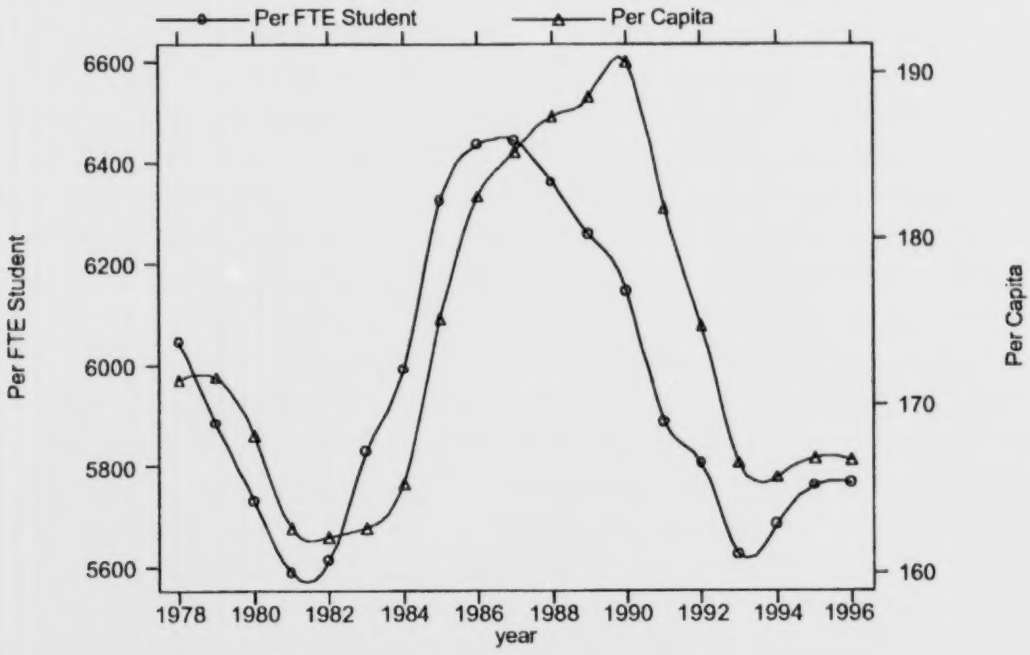


Source: Authors' calculations based on data from Center for Higher Education and Educational Finance and Bureau of Economic Analysis, Department of Commerce.

Figure 2: State appropriations for higher education as share of state expenditures

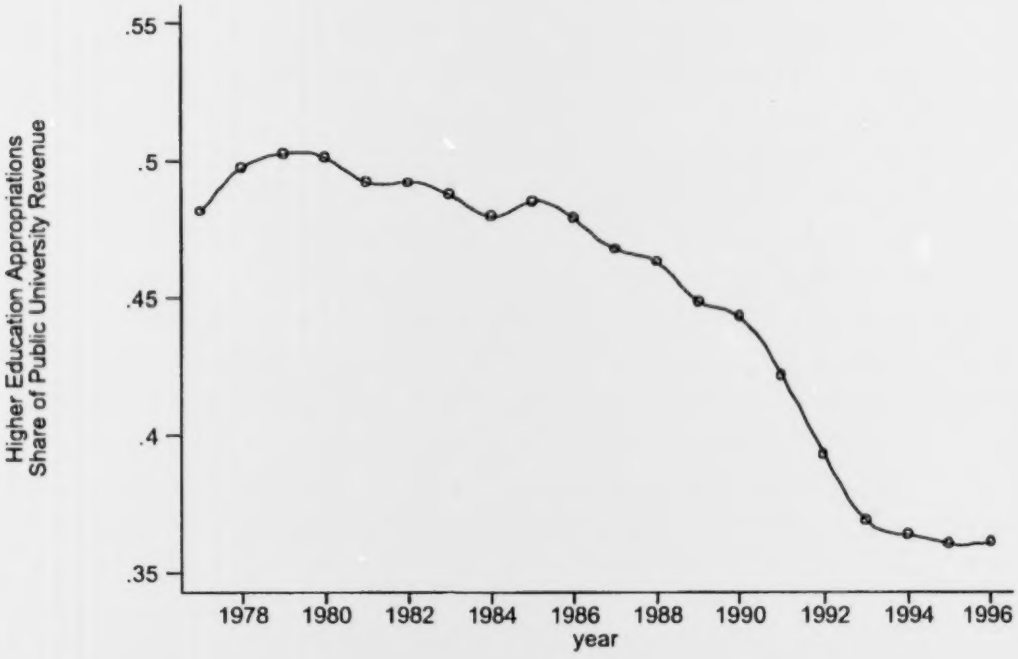
Source: Authors' calculations based on data from Center for Higher Education and Educational Finance; Bureau of the Census, Department of Commerce.

Figure 3: State appropriations for higher education per capita and per student



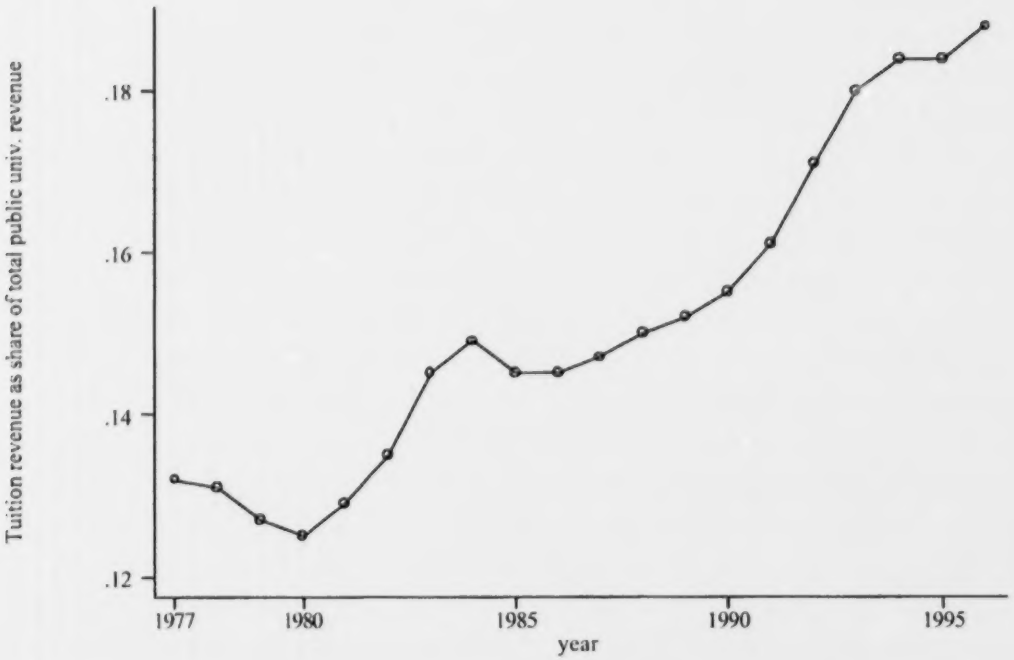
Source: Authors' calculations based on data from Center for Higher Education and Educational Finance; Bureau of the Census, Department of Commerce; and Department of Education, Integrated Post-Secondary Education Data System (IPEDS).

Figure 4: State appropriations as share of public university revenue



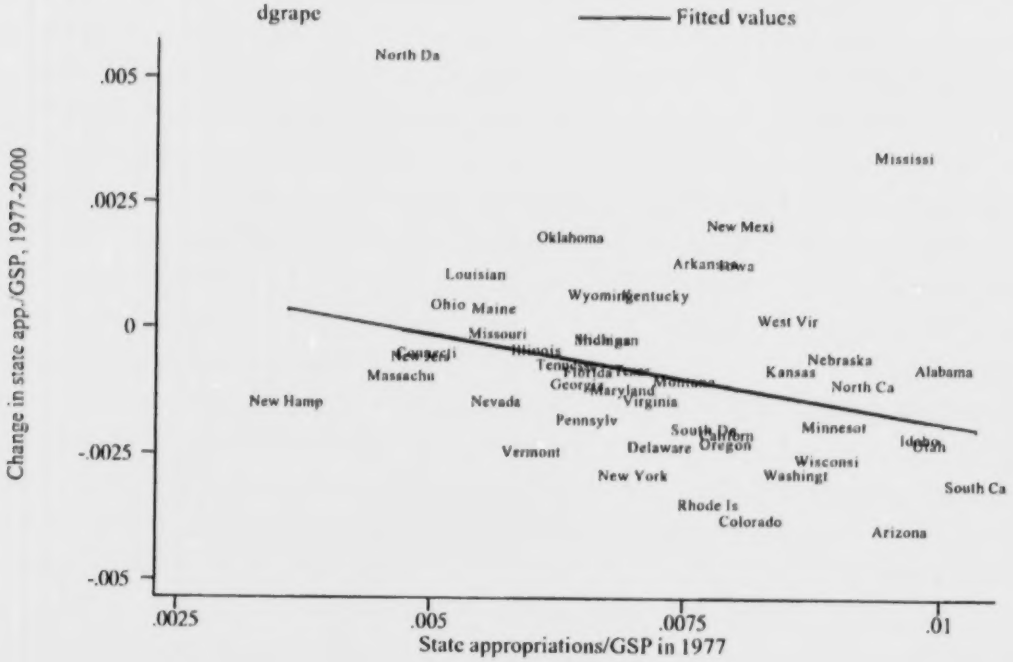
Source: Authors' calculations based on data from Center for Higher Education and Educational Finance and Department of Education, National Center for Education Statistics.

Figure 5: Tuition as share of public university revenue



Source: Authors' calculations based on data from Department of Education, National Center for Education Statistics.

Figure 6: Change in state appropriations relative to initial level, 1977–2000



Source: Authors' calculations based on data from Center for Higher Education and Educational Finance and Bureau of Economic Analysis, Department of Commerce.

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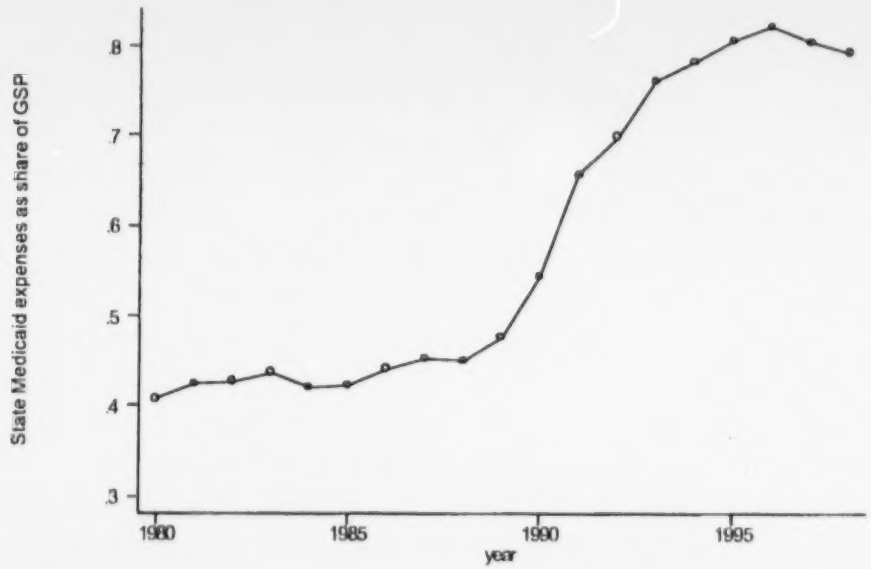
Figure 7: State expenditures as a share of GSP

Source: Authors' calculations based on data from Bureau of Economic Analysis, Department of Commerce.

Figure 8: State Medicaid expenses as percent of GSP



Source: Authors' calculations based on data from State Health Expenditure Accounts (SHEA), Centers for Medicare and Medicaid Services; and Bureau of the Census, Department of Commerce.

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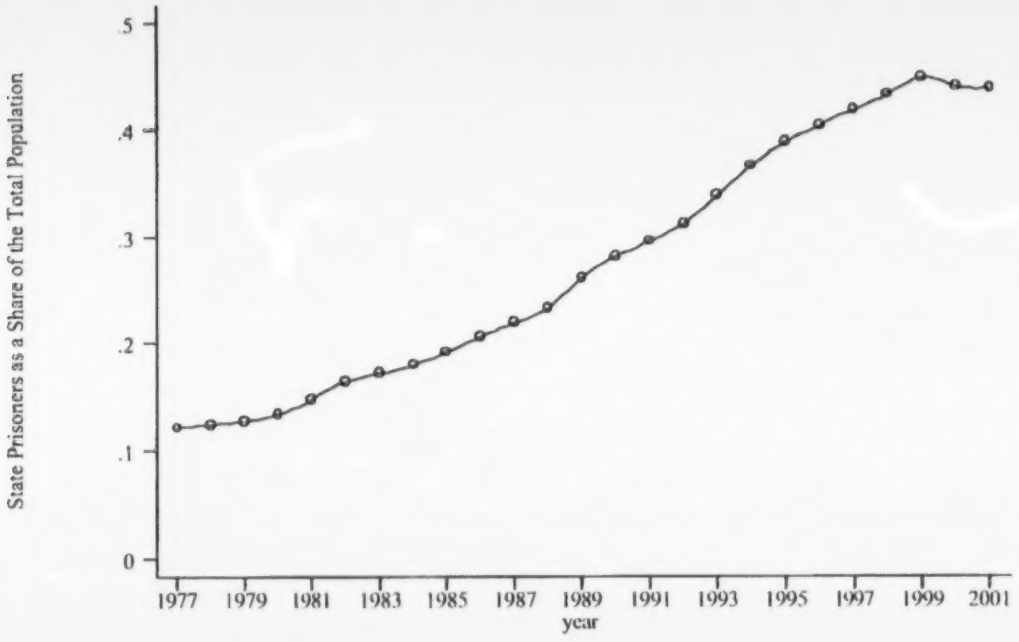
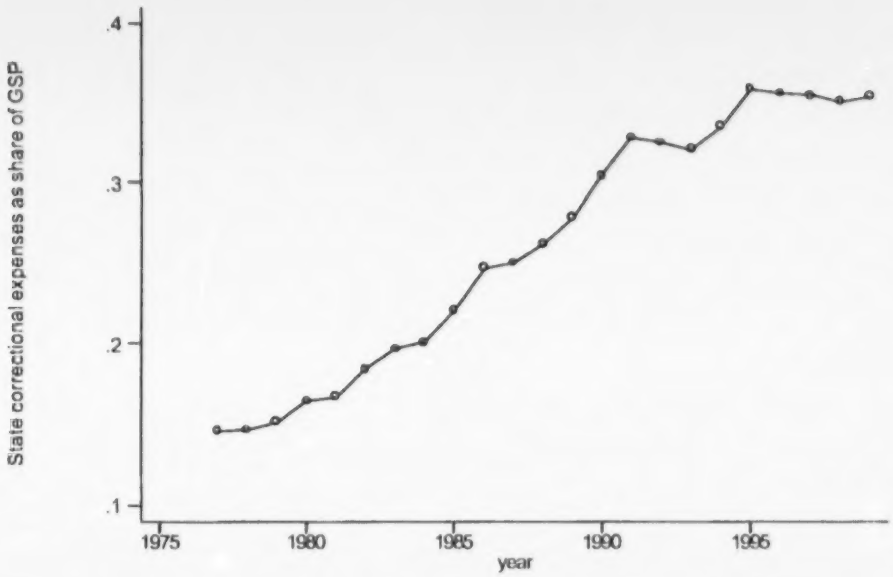
Figure 9: State prisoners as percent of population



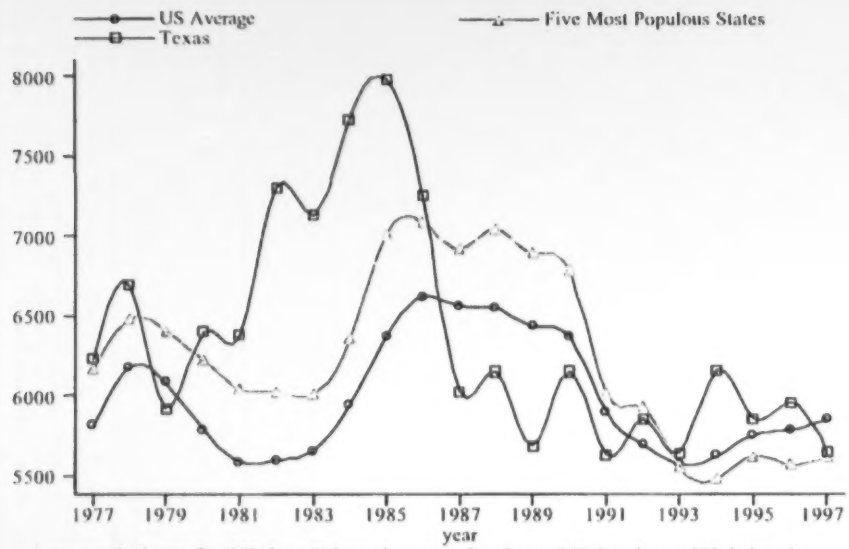
Source: Authors' calculations based on U.S. Census Bureau and U.S. Department of Justice, Bureau of Justice Statistics: Prisoners under State or Federal Jurisdiction.

Figure 10: State correctional expenses as percent of GSP



Source: Authors' calculations based on data from Bureau of the Census, Department of Commerce.

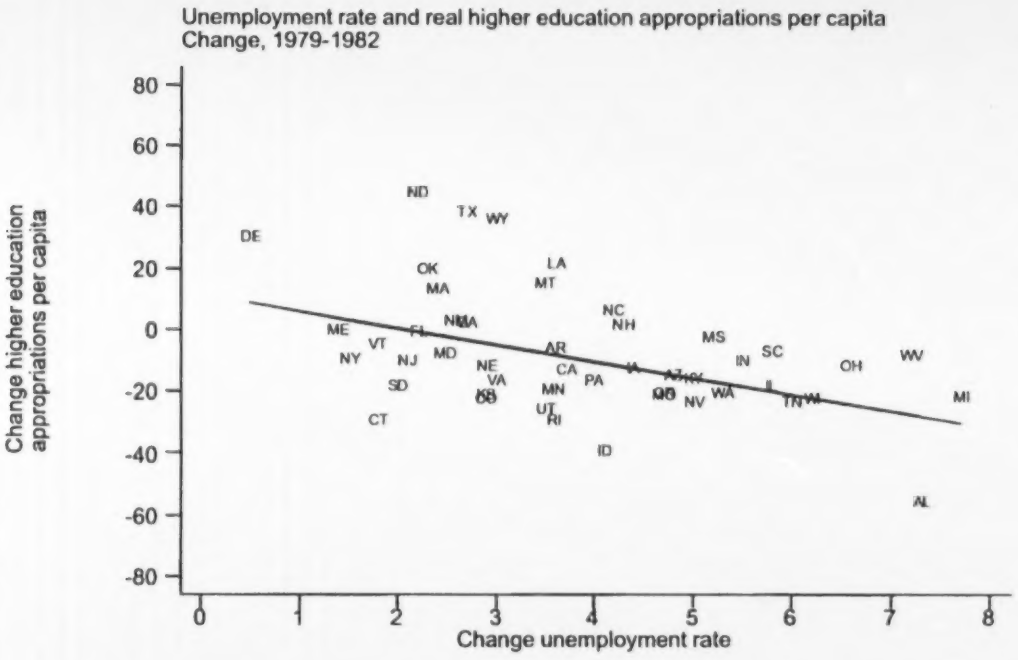
Figure 11: Real appropriations per student



Appropriations for Higher Education per Student, PT Students Weighted

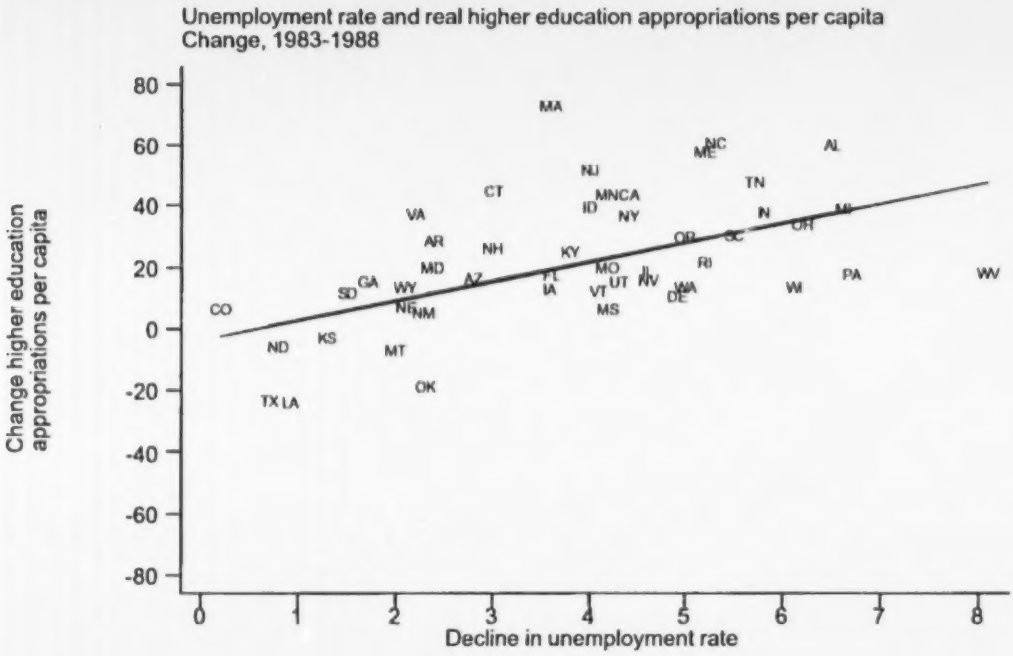
Source: Authors' calculations based on data from Center for Higher Education and Educational Finance and Department of Education, IPEDS.

Figure 12: Unemployment and higher education appropriations, 1979–82



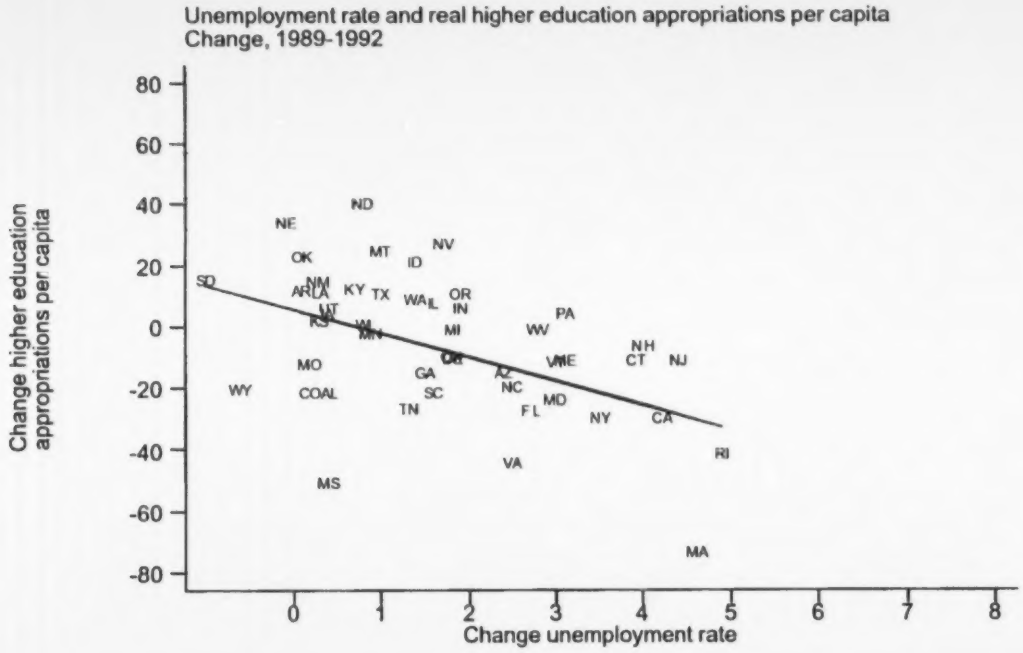
Source: Authors' calculations based on data from Center for Higher Education and Educational Finance; Bureau of the Census, Department of Commerce; and Bureau of Labor Statistics, Department of Labor.

Figure 13: Unemployment and higher education appropriations, 1983–88



Source: Authors' calculations based on data from Center for Higher Education and Educational Finance; Bureau of the Census, Department of Commerce; and Bureau of Labor Statistics, Department of Labor.

Figure 14: Unemployment and higher education appropriations, 1989–92



Source: Authors' calculations based on data from Center for Higher Education and Educational Finance; Bureau of the Census, Department of Commerce; and Bureau of Labor Statistics, Department of Labor.

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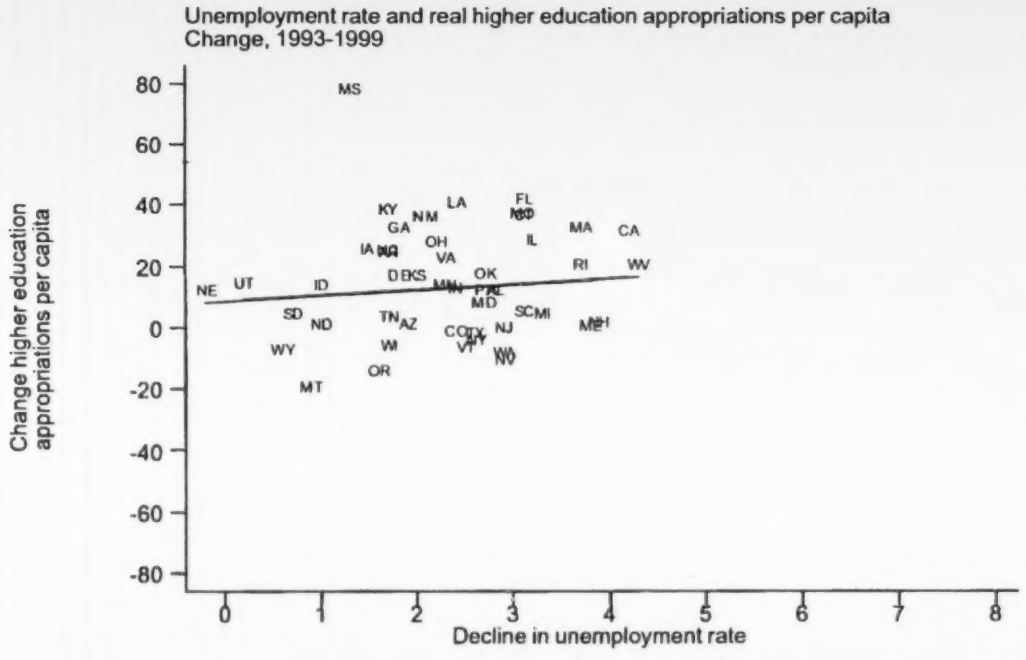
Figure 15: Unemployment and higher education appropriations, 1993–99



Source: Authors' calculations based on data from Center for Higher Education and Educational Finance; Bureau of the Census, Department of Commerce; and Bureau of Labor Statistics, Department of Labor.

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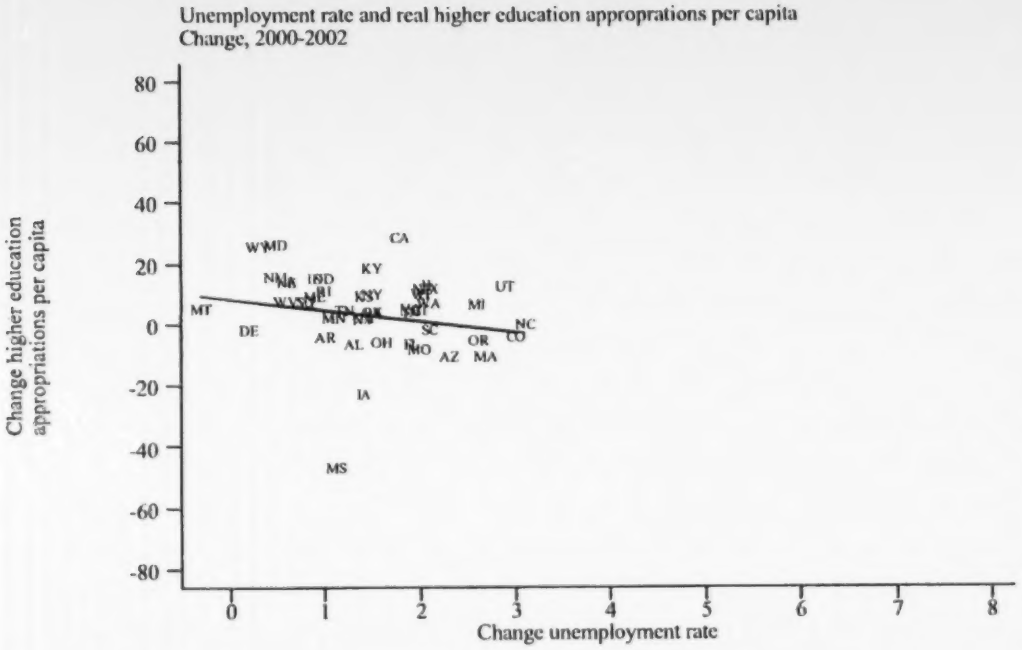
Figure 16: Unemployment and higher education appropriations, 2000–02



Source: Authors' calculations based on data from Center for Higher Education and Educational Finance; Bureau of the Census, Department of Commerce; and Bureau of Labor Statistics, Department of Labor.

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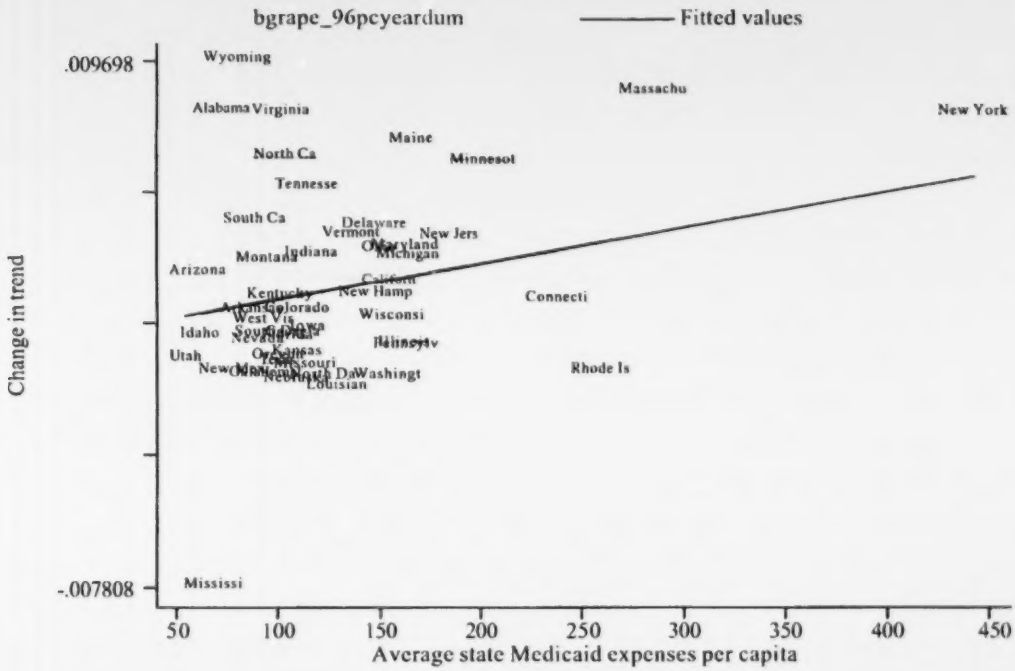
Figure 17: Trend shift in higher education appropriations and Medicaid



Source: Authors' calculations.

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Figure 18: Coefficients on lagged unemployment rate versus Medicaid costs

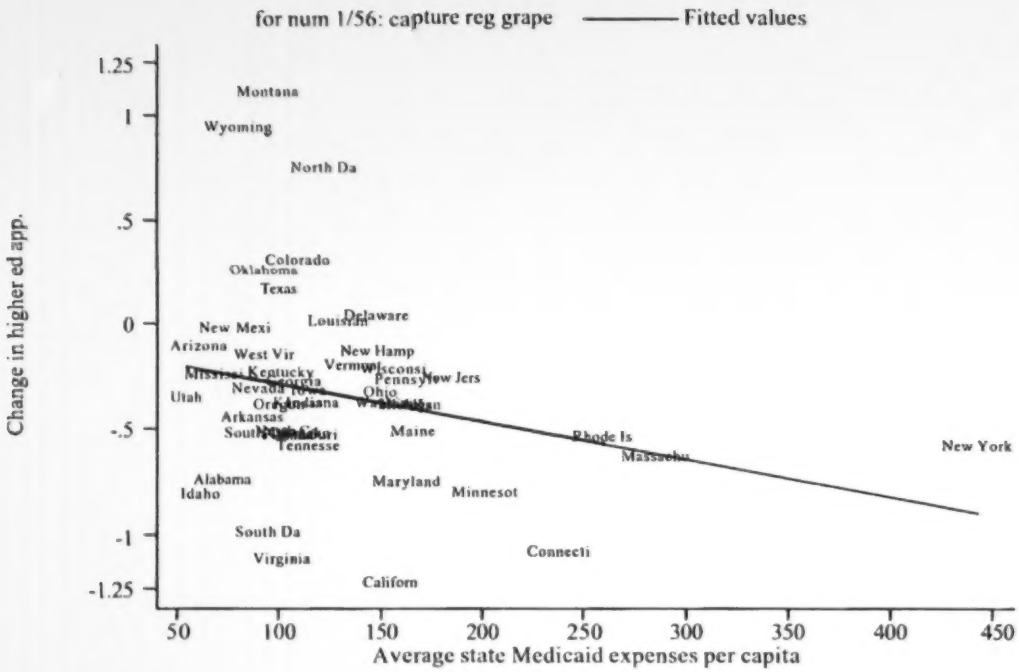

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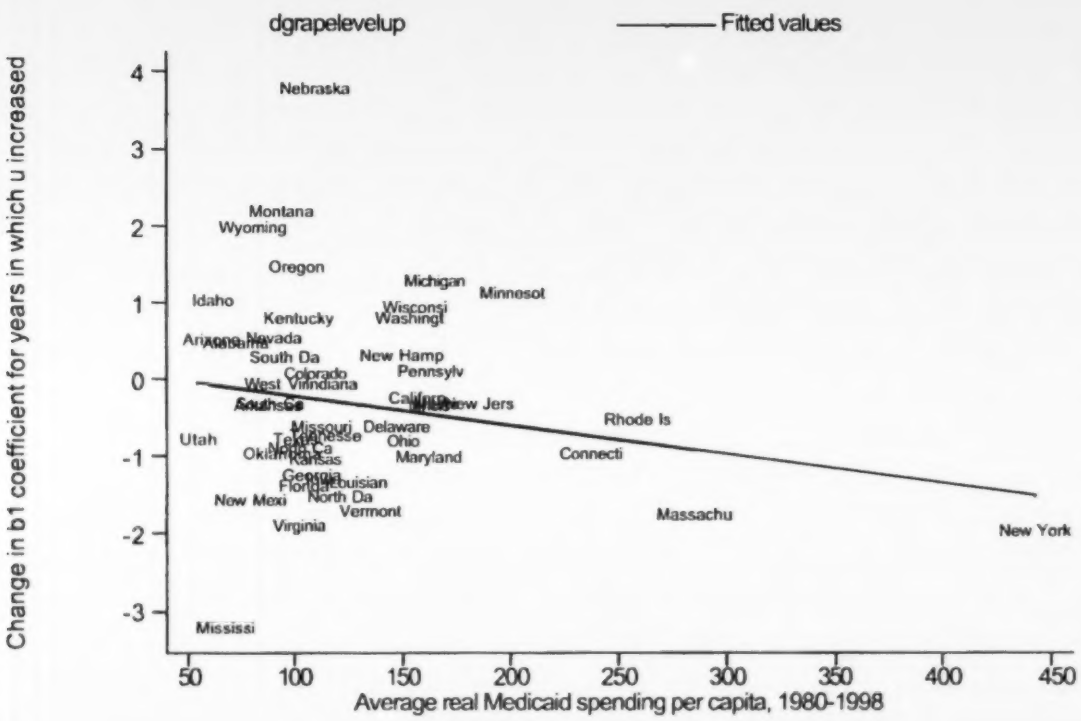
Figure 19: Change in coefficients on lagged unemployment rate for increases in unemployment rate versus Medicaid costs



Source: Authors' calculations.

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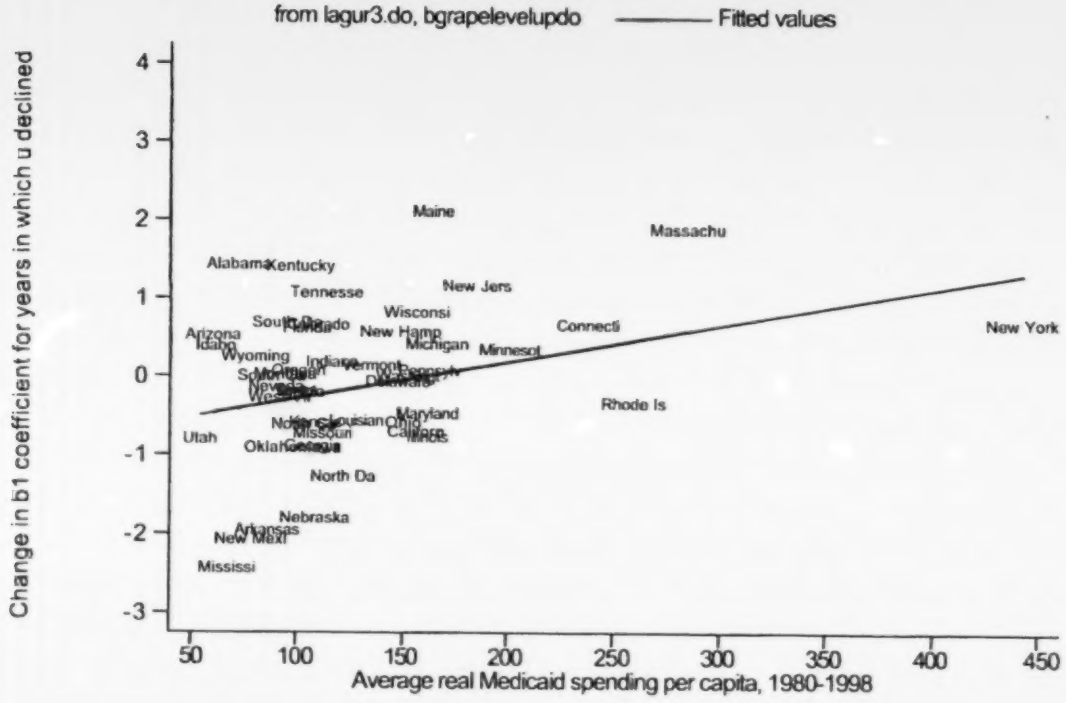
Figure 20: Change in coefficients on lagged unemployment rate for decreases in unemployment rate versus Medicaid costs



Source: Authors' calculations.

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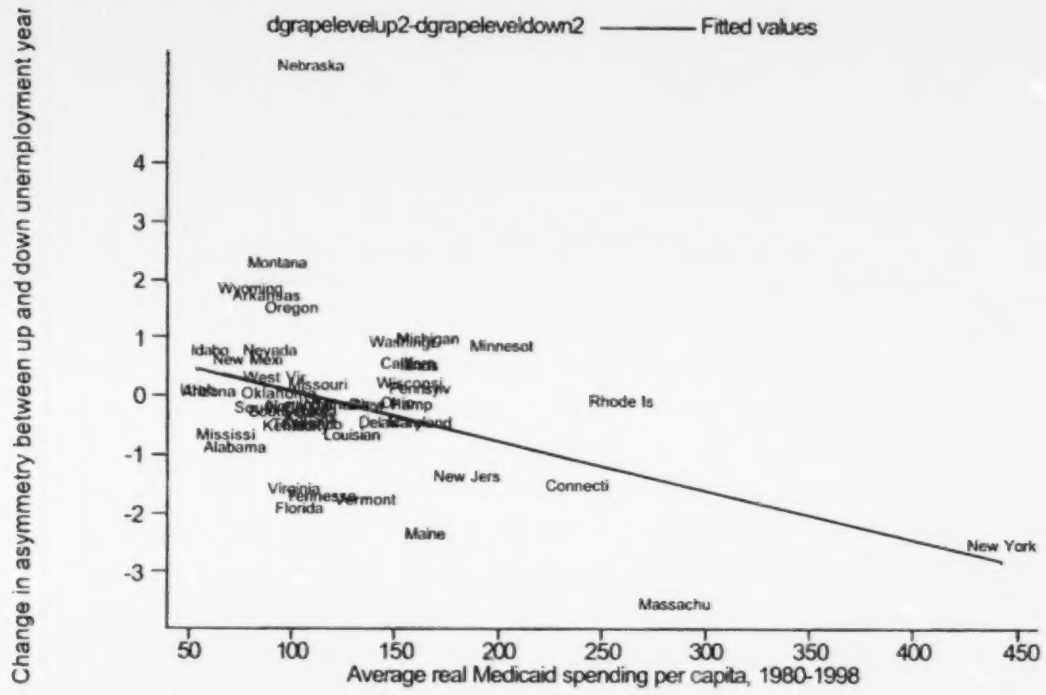
Figure 21: Change in asymmetrical response to lagged unemployment rate versus Medicaid costs



Source: Authors' calculations.

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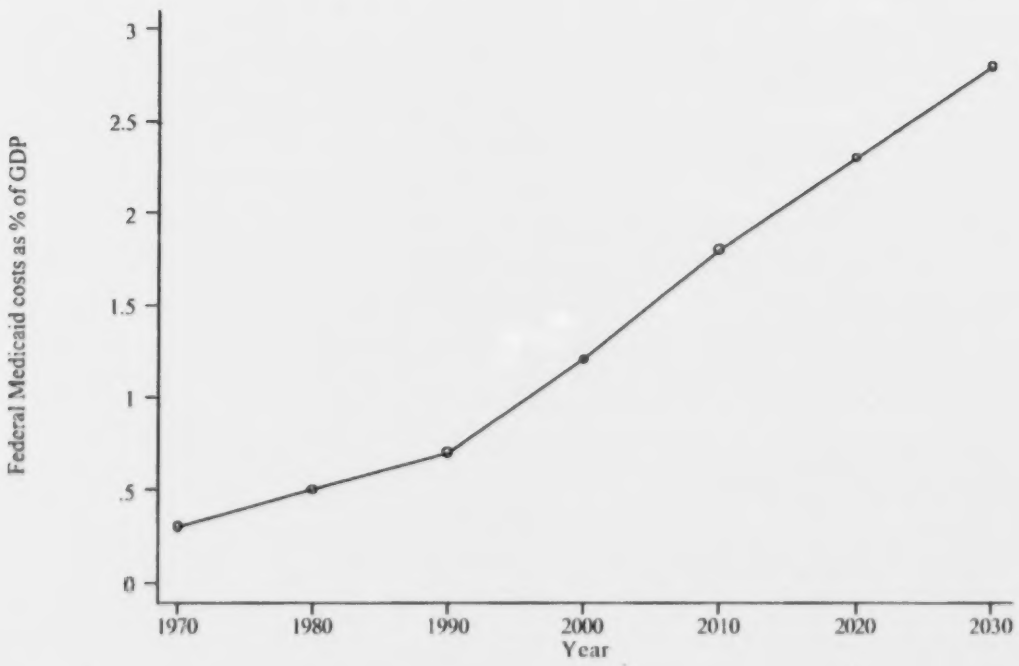
Figure 22: The ratio of expenditures per student at public and private institutions

Source: Authors' calculations based on data from Department of Education, National Center for Education Statistics.

Figure 23: Federal Medicaid costs as share of GDP



Source: Congressional Budget Office, "A 125-Year Picture of the Federal Government's Share of the Economy, 1950 to 2075," July 2002, Table 2.

Table 1: Inequality in state appropriations for higher education across time

	Real per capita		Share of GSP		SD(log real per capita)
	Gini	*90/10*	*Gini*	*90/10*	
1977	0.128	1.92	0.126	1.95	0.250
1980	0.124	1.78	0.135	1.86	0.245
1985	0.135	1.86	0.143	1.97	0.265
1990	0.115	1.63	0.140	2.00	0.228
1991	0.124	1.81	0.149	2.07	0.240
1992	0.129	1.99	0.156	1.92	0.251
1993	0.129	2.03	0.160	2.01	0.252
1994	0.126	1.86	0.153	2.03	0.242
1995	0.134	1.85	0.167	2.13	0.254
1996	0.131	1.84	0.166	2.07	0.253
1997	0.130	1.78	0.169	2.23	0.256
1998	0.126	1.83	0.169	2.18	0.250
1999	0.127	1.85	0.172	2.19	0.255
2000	0.129	1.84	0.172	2.24	0.257

Source: Authors' calculations based on data from Center for Higher Education and Educational Finance and Bureau of Economic Analysis, Department of Commerce.

Table 2: Shares of state budgets

	1985	2000	Change
Mean-tested benefits (including Medicaid)	17.2%	22.0%	4.8%
Higher education	12.2%	11.1%	-1.1%
Primary and secondary education	20.7%	20.8%	0.1%
Correctional and law	4.2%	5.4%	1.2%
Highways	8.5%	6.8%	-1.7%
Other	37.2%	33.8%	-3.4%
TOTAL	100.0%	100.0%	

Source: Authors' calculations based on data from Bureau of the Census, Department of Commerce.

Table 3: Real higher education appropriations per capita

Dependent variable: real higher education appropriations per capita ($1,000)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Unemployment rate (t - 1)	-0.320	-0.379	-0.396	-0.392	-0.352	-0.356	-0.414	-0.415
	(0.050)	(0.047)	(0.051)	(0.050)	(0.062)	(0.062)	(0.065)	(0.064)
Total state revenue per capita (t - 1)		0.011	0.022	0.021	0.021	0.022	0.021	0.022
		(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Medicaid expenditures per capita			-0.067	-0.064	-0.062	-0.073	-0.063	-0.058
			(0.023)	(0.023)	(0.023)	(0.023)	(0.021)	(0.021)
Democratic Senate				0.003	0.003	0.003	0.003	0.003
				(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Democratic House						0.004	0.003	0.003
						(0.002)	(0.002)	(0.002)
Democratic governor						0.001	0.001	0.001
						(0.001)	(0.001)	(0.001)
Dummy for stringent balanced budget rule, interacted with lag unemployment rate					-0.085	-0.085	-0.066	-0.064
					(0.057)	(0.057)	(0.055)	(0.055)
Average income tax on wages							0.003	0.003
							(0.001)	(0.001)
Top marginal income tax rate							0.001	0.001
							(0.001)	(0.001)
Correctional spending per capita								-0.059
								(0.053)
State dummies	Y	Y	Y	Y	Y	Y	Y	Y
Year dummies	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1200	1152	912	893	893	882	882	882
R^2	0.862	0.882	0.905	0.907	0.907	0.909	0.913	0.913

Table 4: Real higher education appropriations per capita

Dependent variable: real higher education appropriations per capita ($1,000)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Unemployment rate (t - 1)	-0.235	-0.279	-0.276	-0.307	-0.252	-0.272	-0.342	-0.294	-0.305
	(0.076)	(0.072)	(0.068)	(0.068)	(0.068)	(0.067)	(0.066)	(0.067)	(0.069)
Total state revenue per capita (t - 1)		0.023	0.037	0.037	0.040	0.040	0.042	0.043	0.043
		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Medicaid expenditures per capita			-0.230	-0.118	-0.129	-0.130	-0.122	-0.132	-0.125
			(0.018)	(0.045)	(0.048)	(0.048)	(0.048)	(0.046)	(0.046)
Average Medicaid expenditures per capita, 1980–98				-0.131	-0.121	-0.113	-0.145	-0.154	-0.155
				(0.051)	(0.055)	(0.055)	(0.057)	(0.052)	(0.052)
Democratic Senate					0.011	0.011	0.005	0.004	0.004
					(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Democratic House							0.011	0.012	0.012
							(0.004)	(0.004)	(0.004)
Democratic governor							-0.001	-0.003	-0.002
							(0.002)	(0.002)	(0.002)
Dummy for stringent balanced budget rule, interacted with lag unemployment rate						0.046	0.056	0.043	0.045
						(0.033)	(0.033)	(0.033)	(0.033)
Average income tax on wages								0.007	0.007
								(0.001)	(0.001)
Top marginal income tax rate								-0.005	-0.005
								(0.001)	(0.001)
Correctional spending per apita									-0.075
									(0.052)
State dummy variables	N	N	N	N	N	N	N	N	N
Year dummy variables	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1200	1152	912	912	893	893	882	882	882
R^2	0.053	0.173	0.328	0.333	0.366	0.367	0.378	0.406	0.408

Table 5: Real higher education appropriations as a share of GSP

Dependent variable: real higher education appropriations as % of GSP	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Unemployment rate (t - 1)	2.485	-3.443	-4.785	-4.405	-4.306	-4.361	-6.149	-6.130
	(2.117)	(1.787)	(1.988)	(1.997)	(2.549)	(2.584)	(2.703)	(2.712)
Total state revenue/GSP (t - 1)		.0031	0.026	0.025	0.025	0.026	0.024	0.024
		(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Medicaid expenditures/GSP			0.004	0.003	0.003	-0.013	-0.003	-0.002
			(0.029)	(0.029)	(0.029)	(0.029)	(0.028)	(0.028)
Democratic Senate				0.161	0.160	0.148	0.152	0.149
				(0.072)	(0.073)	(0.073)	(0.072)	(0.073)
Democratic House						0.203	0.197	0.193
						(0.068)	(0.066)	(0.066)
Democratic Ggvernor						0.050	0.062	0.059
						(0.048)	(0.047)	(0.047)
Dummy for stringent balanced budget rule, interacted with lag unemployment rate					-0.199	-0.288	0.537	0.570
					(2.517)	(2.529)	(2.538)	(2.527)
Average income tax on wages							0.123	0.123
							(0.031)	(0.031)
Top marginal income tax rate							0.039	0.039
							(0.022)	(0.022)
Correctional spending/GSP								-0.029
								(0.060)
State dummy variables	Y	Y	Y	Y	Y	Y	Y	Y
Year dummy variables	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1104	1104	912	893	893	882	882	882
R^2	0.891	0.908	0.917	0.918	0.918	0.919	0.922	0.922

Table 6: Real higher education appropriations as a share of GSP

Dependent variable: real higher education appropriations as % of GSP	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Unemployment rate (t - 1)	12.625	-2.684	0.381	-2.624	-0.754	-3.057	-7.198	-4.640	-4.740
	(3.596)	(3.349)	(3.188)	(3.133)	(3.126)	(3.166)	(3.054)	(3.080)	(3.061)
Total state revenue/GSP (t - 1)		0.038	0.042	0.043	0.045	0.044	0.046	0.046	0.044
		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)
Medicaid expenditures/GSP			-0.347	-0.031	-0.051	-0.049	-0.029	-0.031	-0.018
			(0.021)	(0.066)	(0.068)	(0.069)	(0.074)	(0.072)	(0.071)
Average Medicaid share of GSP, 1980–98				-0.362	-0.336	-0.311	-0.370	-0.393	-0.410
				(0.073)	(0.076)	(0.078)	(0.083)	(0.080)	(0.079)
Democratic Senate					0.494	0.499	0.204	0.118	0.127
					(0.104)	(0.102)	(0.140)	(0.139)	(0.138)
Democratic House							0.599	0.628	0.668
							(0.165)	(0.162)	(0.158)
Democratic governor							-0.062	-0.139	-0.120
							(0.101)	(0.101)	(0.101)
Dummy for stringent balanced budget rule, interacted with lag unemployment rate						5.272	5.576	4.685	4.817
						(1.472)	(1.472)	(1.426)	(1.413)
Average income tax on wages								0.322	0.334
								(0.050)	(0.049)
Top marginal income tax rate								-0.197	-0.192
								(0.041)	(0.040)
Correctional spending/GSP									-0.220
									(0.061)
State dummy variables	N	N	N	N	N	N	N	N	N
Year dummy variables	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1104	1104	912	912	893	893	882	882	882
R^2	0.064	0.245	0.397	0.416	0.453	0.461	0.473	0.503	0.510

Table 7: Coefficients on lagged unemployment rate

Dependent variable: real higher education appropriations per capita	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Full sample (1977-)								
Coefficient on unemployment rate (t - 1)	-0.332	-0.386	-0.398	-0.394	-0.354	-0.357	-0.415	-0.416
Standard error	(0.050)	(0.047)	(0.051)	(0.051)	(0.062)	(0.062)	(0.065)	(0.064)
Restricted sample (1993 forward)								
Coefficient on unemployment rate (t - 1)	-0.209	-0.215	-0.160	-0.156	-0.069	-0.073	-0.051	-0.087
Standard error	(0.100)	(0.101)	(0.112)	(0.119)	(0.141)	(0.149)	(0.144)	(0.144)

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Table 8: Coefficients on lagged unemployment rate

State	Real per capita appropriations ($1,000) Coeff. on unem.	Standard error	Log real per capita appropriations Coeff. on unem.	Standard error
Alabama	-0.7646	0.1948	-3.8822	0.9753
Arizona	-0.1276	0.1754	-0.7827	0.9755
Arkansas	-0.4634	0.2358	-3.3929	1.4657
California	-1.2417	0.1552	-6.3161	0.8565
Colorado	0.2927	0.3302	1.6423	1.9065
Connecticut	-1.1034	0.2456	-7.0551	1.7014
Delaware	0.0214	0.1810	0.3190	0.9721
Florida	-0.5504	0.1739	-4.1403	1.2883
Georgia	-0.2993	0.2005	-1.8348	1.2783
Idaho	-0.8308	0.2195	-4.7883	1.2035
Illinois	-0.4065	0.1173	-2.5835	0.7105
Indiana	-0.4017	0.0591	-2.6108	0.3575
Iowa	-0.3383	0.1141	-1.6205	0.5279
Kansas	-0.3974	0.2082	-1.9482	1.0377
Kentucky	-0.2503	0.1591	-1.4518	0.8860
Louisiana	-0.0119	0.3321	-0.1392	2.0740
Maine	-0.5369	0.1510	-3.9170	1.1459
Maryland	-0.7696	0.1847	-4.4308	1.0490
Massachusetts	-0.6501	0.1888	-4.3869	1.4000
Michigan	-0.4043	0.0684	-2.4557	0.4105
Minnesota	-0.8234	0.2141	-3.5032	0.9080
Mississippi	-0.2648	0.2891	-1.3958	1.4756
Missouri	-0.5516	0.1175	-4.4833	0.8860
Montana	1.0914	0.2145	6.3904	1.2368
Nebraska	-0.5419	0.1749	-2.7325	0.8399
Nevada	-0.3264	0.1548	-2.4407	1.0842
New Hampshire	-0.1482	0.0905	-2.1888	1.2829
New Jersey	-0.2795	0.1694	-1.8509	1.1412
New Mexico	-0.0430	0.2207	-0.1770	0.9476
New York	-0.6021	0.1752	-2.9864	0.9867
North Carolina	-0.532	0.1225	-2.1650	0.5100
North Dakota	0.7263	0.5597	2.9850	2.3574
Ohio	-0.3451	0.0913	-2.4776	0.6650
Oklahoma	0.2380	0.2446	1.3630	1.4052
Oregon	-0.4105	0.1538	-2.5280	0.9516
Pennsylvania	-0.2848	0.0705	-2.2432	0.5541
Rhode Island	-0.5569	0.1097	-3.9923	0.7670
South Carolina	-0.5385	0.0630	-2.7991	0.3186
South Dakota	-1.0022	0.2200	-7.2798	1.6432
Tennessee	-0.6038	0.1023	-4.0059	0.6738
Texas	0.1404	0.4368	0.6765	2.3322
Utah	-0.3683	0.1731	-1.8793	0.8707
Vermont	-0.2224	0.1034	-1.8578	0.9539
Virginia	-1.1283	0.2638	-6.1800	1.5195
Washington	-0.4011	0.1457	-2.0006	0.7005
West Virginia	-0.1692	0.0579	-1.0028	0.3457
Wisconsin	-0.2382	0.0690	-1.2177	0.3543
Wyoming	0.9224	0.3116	3.3874	1.1708

Table 9: Weighted mean of responsiveness to 1 percentage point movement in unemployment rate when coefficients allowed to vary by state

(Standard errors in parentheses[a])	Real per capita levels	Log of real per capita levels
Capital spending	-$9.44 ($0.07)	-.049 (0.003)
Higher education appropriations[b]	-$3.78 ($0.20)	-.023 (0.001)
Correctional spending	-$1.22 ($0.13)	-.019 (0.002)
Primary and secondary education spending	$5.07 ($1.33)	.020 (0.003)
Medicaid[b]	$0.13 ($0.20)	.001 (0.002)
Welfare (including Medicaid)	$3.10 ($0.95)	.003 (0.002)
Total state spending	-$22.74 ($2.43)	-.010 (0.001)

a. Standard error assumes that the estimate for each state is independent of the estimate for other states.
b. Data from non-Census source with different accounting concept from rest of items

Table 10: Responsiveness to 1 percentage point movement in unemployment rate

(Standard errors in parentheses)	Real per capita levels	Log of real per capita levels
Capital spending	-$5.58 (1.52)	-.028 (.006)
Higher education appropriations[a]	-$3.96 (0.48)	-.025 (.003)
Correctional spending	-$0.10 0.40	-.096 (.005)
Medicaid[a]	$5.90 (.84)	.010 (.005)
Welfare (including Medicaid)	$6.68 (2.33)	.005 (.005)
Total state spending	$2.75 (5.86)	-.016 (.018)

a. Data from non-Census source with different accounting concept from rest of items

Table 11: Appropriations for higher education, FY 2002 and FY 2003

	FY 2002	FY 2003	Real percent change, assuming 3 percent inflation
Alabama	$ 1,115,999	$ 1,148,152	-0.12
Arizona	$ 884,175	$ 907,227	-0.38
Arkansas	$ 625,112	$ 625,987	-2.78
California	$ 9,473,522	$ 9,590,129	-1.72
Colorado	$ 756,809	$ 817,236	4.84
Connecticut	$ 753,681	$ 762,600	-1.76
Delaware	$ 186,398	$ 192,889	0.47
Florida	$ 2,725,210	$ 2,916,595	3.91
Georgia	$ 1,707,734	$ 1,734,481	-1.39
Idaho	$ 323,340	$ 305,337	-8.32
Illinois	$ 2,904,184	$ 2,787,048	-6.83
Indiana	$ 1,321,191	$ 1,326,682	-2.51
Iowa	$ 786,640	$ 769,854	-4.98
Kansas	$ 712,923	$ 712,027	-3.03
Kentucky	$ 1,063,668	$ 1,094,599	-0.09
Louisiana	$ 997,813	$ 1,055,455	2.70
Maine	$ 239,002	$ 242,082	-1.66
Maryland	$ 1,282,690	$ 1,301,845	-1.46
Massachusetts	$ 1,017,564	$ 989,019	-5.64
Michigan	$ 2,257,732	$ 2,263,572	-2.66
Minnesota	$ 1,379,832	$ 1,419,395	-0.13
Mississippi	$ 765,014	$ 775,243	-1.61
Missouri	$ 974,646	$ 875,070	-12.83
Montana	$ 149,838	$ 146,034	-5.38
Nebraska	$ 521,316	$ 520,691	-3.03
Nevada	$ 346,845	$ 370,593	3.73
New Hampshire	$ 107,573	$ 111,135	0.30
New Jersey	$ 1,751,643	$ 1,791,323	-0.71
New Mexico	$ 611,175	$ 620,718	-1.40
New York	$ 3,602,215	$ 3,823,188	3.04
North Carolina	$ 2,442,690	$ 2,449,659	-2.64
North Dakota	$ 201,497	$ 201,497	-2.91
Ohio	$ 2,084,535	$ 2,112,609	-1.61
Oklahoma	$ 796,312	$ 811,474	-1.06
Oregon	$ 679,831	$ 604,330	-13.69
Pennsylvania	$ 2,011,695	$ 2,011,110	-2.94
Rhode Island	$ 174,473	$ 169,438	-5.71
South Carolina	$ 856,200	$ 830,305	-5.85
South Dakota	$ 143,163	$ 148,588	0.77
Tennessee	$ 1,071,515	$ 1,153,989	4.56
Texas	$ 5,135,147	$ 5,209,765	-1.50
Utah	$ 586,208	$ 566,431	-6.19
Vermont	$ 71,354	$ 75,455	2.67
Virginia	$ 1,631,856	$ 1,545,680	-8.04
Washington	$ 1,370,342	$ 1,375,255	-2.56
West Virginia	$ 392,051	$ 393,695	-2.51
Wisconsin	$ 1,194,852	$ 1,220,788	-0.81
Wyoming	$ 161,917	$ 189,786	13.80

Source: Center for Higher Education and Educational Finance, Individual State Reports. Available at http://www.coe.ilstu.edu/grapevine/individual.html. Accessed April 9, 2003.

APPENDIX TABLE 1

Dependent variable: real higher education appropriations per capita ($1,000)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Unemployment rate (t - 1)	-0.320	-0.379	-0.396	-0.405	-0.404	-0.418	-0.465	-0.465
	(0.050)	(0.047)	(0.051)	(0.048)	(0.048)	(0.060)	(0.062)	(0.062)
Total state revenue per capita (t - 1)		0.011	0.022	0.025	0.026	0.026	0.025	0.025
		(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Medicaid expenditures per capita			-0.067	-0.041	-0.051	-0.051	-0.042	-0.042
			(0.023)	(0.025)	(0.025)	(0.025)	(0.023)	(0.023)
FTE public enrollment as share of population				2.672	2.541	2.258	2.473	2.476
				(0.386)	(0.394)	(0.411)	(0.415)	(0.391)
Democratic Senate					0.001	0.002	0.002	0.002
					(0.002)	(0.002)	(0.002)	(0.002)
Democratic House					0.002	0.002	0.002	0.002
					(0.002)	(0.002)	(0.002)	(0.001)
Democratic governor					0.001	0.001	0.001	0.001
					(0.001)	(0.001)	(0.001)	(0.001)
Dummy for stringent balanced budget rule, interacted with lag unemployment rate						0.029	0.040	0.040
						(0.058)	(0.056)	(0.056)
Average income tax on wages							0.002	0.002
							(0.001)	(0.001)
Top marginal income tax rate							0.001	0.001
							(0.000)	(0.000)
Correctional spending per capita								0.001
								(0.048)
State dummies	Y	Y	Y	Y	Y	Y	Y	Y
Year dummies	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1200	1152	912	864	836	836	836	836
R^2	0.862	0.882	0.9047	0.915	0.918	0.918	0.920	0.920

APPENDIX TABLE 2

Dependent variable: real higher education appropriations per capita ($1,000)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Unemployment rate (t - 1)	-0.235	-0.279	-0.276	-0.307	-0.285	-0.374	-0.396	-0.362	-0.369
	(0.076)	(0.072)	(0.068)	(0.068)	(0.064)	(0.061)	(0.061)	(0.063)	(0.065)
Total state revenue per capita (t - 1)	0.022	0.037	0.037	0.033	0.037	0.037	0.040	0.040	
		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Medicaid expenditures per capita			-0.230	-0.118	-0.067	-0.076	-0.077	-0.091	-0.086
			(0.018)	(0.045)	(0.045)	(0.048)	(0.048)	(0.048)	(0.049)
Average Medicaid expenditures per capita, 1980–98				-0.131	-0.084	-0.114	-0.107	-0.104	-0.105
				(0.051)	(0.048)	(0.053)	(0.053)	(0.052)	(0.052)
FTE public enrollment as share of population					2.391	2.471	2.464	2.330	2.320
					(0.199)	(0.218)	(0.215)	(0.219)	(0.220)
Democratic Senate						0.004	0.004	0.004	0.004
						(0.003)	(0.003)	(0.003)	(0.003)
Democratic House						0.017	0.017	0.017	0.018
						(0.004)	(0.004)	(0.004)	(0.004)
Democratic governor						0.000	0.000	-0.002	-0.001
						(0.002)	(0.002)	(0.002)	(0.002)
Dummy for stringent balanced budget rule, interacted with lag unemployment rate							0.044	0.052	0.053
							(0.031)	(0.032)	(0.032)
Average income tax on wages								0.004	0.004
								(0.001)	(0.001)
Top marginal income tax rate								-0.003	-0.003
								(0.001)	(0.001)
Correctional spending per capita									-0.040
									(0.055)
State dummies	N	N	N	N	N	N	N	N	N
Year dummies	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1200	1152	912	912	864	836	836	836	836
R^2	0.053	0.173	0.328	0.333	0.430	0.473	0.475	0.484	0.484

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